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Summary

The ENDURE Executive Committee has confirmed the strategic importance of fostering mobility of researchers, especially among the partners. Therefore, in the second year of activity the Network has also allocated substantial funding to this activity.

The second internal mobility plan (MP) of ENDURE was set up during the period October-December 2007 and it primarily involved partners of the ENDURE Network. However, a call for a limited number of researchers from INCO countries was also planned and issued.

All information about the implementation, rules, duties and procedures were regularly updated by IA3 coordination office in the public web-site. In particular, three calls were published: one for the internal mobility plan, one for ENDURE mobility scholarships for co-supervised PhD and one call for mobility involving scientists from INCO countries.

At the moment, about 50% of the researchers included in the second internal mobility plan have done all or part of their mobility period: 18 researchers have completely finished while three have done part of it, two of whom will finish their mobility period during 2009 whereas the third cancelled the remaining period. Eleven researchers have cancelled their mobility for various reasons. It should be noted that most of these were originally transferred from the 1st MP to the 2nd MP. A total of 42.5 months of mobility have been done.

Comparing the 2008 results with those obtained during 2007, the number of researchers implementing their mobility doubled from 10 to about 20. Forty seven percent of mobility months included in the 2nd MP were implemented during 2008, showing about 10% increase in relation to the previous year.

Nineteen researchers sent their final report to the activity leader. For some of them additional information or clarifications of specific points were requested, however all of them at the end were approved by the activity leader. The remaining 12 researchers have been included in the third mobility plan and all of them have recently confirmed that they will complete their mobility according to the plan during 2009.

Two researchers from INCO countries applied and will benefit from a three-month mobility at one of the ENDURE organisations.

1. Second internal mobility plan

1.1 Planning

The ENDURE Executive Committee has confirmed the strategic importance of fostering mobility of researchers, especially among the partners. Therefore, in the second year of activity the Network has also allocated substantial funding to this activity.

The second internal mobility plan (MP) of ENDURE was set up during the period October-December 2007 and it primarily involved partners of the ENDURE Network. However, a call for a limited number of researchers from INCO countries was also planned.

1.2 Call, rules, duties and procedures

The second internal MP involves only people belonging to the network's partners. The call was published at the end of October 2007 with the deadline on 30th November (see annex I).

Twenty eight applications were received, evaluated and accepted; the requested duration of two stays had to be shortened because of the high costs involved. The plan included a total of 44 researchers (15 senior scientists and 29 younger researchers including 14 PhD students – see annex II) resulting from 28 applications plus 16 researchers transferred from the 1st MP who had not implemented their mobility during 2007.

Young researcher means a PhD student or a person with less than four years of experience after his/her degree (including PhD courses), while senior researcher is a person with at least ten years of research experience after his/her degree. For each stage, the length of the period was set at 1-3 months for senior researchers and 2-6 months for younger researchers. The grants were roughly calculated according to Marie Curie schemes, i.e. according to the level of the researcher and the country of the hosting institution. All research partners were involved either as sending (10) or hosting (14) institution.

Other rules, duties and procedures were identical to those used for the 1st internal mobility plan (see Deliverable DI3.2).

1.3 Implementation of the second mobility plan

All information about the implementation, rules, duties and procedures were regularly updated by IA3 coordination office in the public ENDURE web-site.

At the moment, about 50% of the researchers included in the second internal mobility plan have done all or part of their mobility period: 18 researchers have completely finished while three have done part of it, two of whom will finish their mobility period during 2009 whereas the third cancelled the remaining period. Eleven researchers have cancelled their mobility for various reasons. It should be noted that most of these were originally transferred from the 1st MP to the 2nd MP. This indicates that the system used for recruiting the researchers before the beginning of the Network

proved to be not very successful. A total of 42.5 months of mobility have been done, which represents about 50% of the overall number of mobility months originally planned (see annex III).

Comparing the 2008 results with those obtained during 2007, the number of researchers implementing their mobility doubled from 10 to about 20. Forty seven percent of mobility months included in the 2nd MP were implemented during 2008, showing about 10% increase in relation to the previous year.

Nineteen researchers sent their final report to the activity leader (attachment no. 1). For some of them additional information or clarification of specific points were requested, however all of them at the end were approved by the activity leader. The remaining 12 researchers have been included in the third mobility plan (spanning from M25 to M42) and all of them have recently confirmed that they will finish their mobility according to the plan by December 2009.

2. Other activities in the second human resources exchange

2.1 Call for ENDURE mobility scholarships for co-supervised PhD

IA3 gave support to SA1 and SA1.2 (Joint education programme) in particular, for the publication of an open call for mobility scholarships for co-supervised PhD. The call was published in the “mobility” pages of the ENDURE public web site (see Annex IV) in mid May with the deadline in mid July 2008. Unfortunately, no applications were received. Together with SA1.2 the possible reasons for this unsuccessful call were analysed and the conclusions were: a) the call was too ambitious, probably involving too much commitment from co-supervisors working at ENDURE institutions, b) economically not attractive for several countries, c) such initiative needs to be advertised much in advance to allow people to properly plan and include this opportunity in their PhD programme.

2.2 Call for mobility involving scientists from INCO countries

IA3 in collaboration with SA3.2 (Foster the participation of research teams from INCO target countries) prepared and published a call for mobility involving scientists from INCO countries. The call was published in the “mobility” pages of the ENDURE public web site (see Annex V) in mid June with the deadline on 9th August 2008. All ENDURE partners collaborating in SA3 contributed to advertise the call through their international links. Only two applications were received, however both researchers (one from Egypt and another from Algeria) had a good CV and proposed a reasonable research programme, therefore both applications were accepted by the evaluation committee formed by the IA3 and SA3 leaders. The implementation of the two mobility periods will be done in the first half of 2009. The IA3 coordination office is giving all needed assistance to reach a smooth implementation.

IA3 and SA3 leaders reckon that the low number of applications was due to an unsatisfactory advertisement of the call. Particular effort will be devoted to this point when a new call will be issued in 2009.

3. Problems

During the implementation of the plan several institutions asked to substitute some of the researchers originally included in the plan and many other deviations from the original plan had to be discussed and agreed.

It has been sometimes difficult to get information back from the participants to the second mobility plan, who often did not answer to e-mails sent by the IA3 coordination office.

Despite all efforts made and the substantial flexibility, several researchers (11) have withdrawn their participation to the mobility plan. More commitment to the mobility plans is needed by both the ENDURE organisations and researchers because this could be considered a waste of resources that could have been devoted to other tasks and/or activities.

Change of the activity leader's assistant has absorbed a significant amount of time. However the two-month overlapping period between them has permitted a rather smooth transition.

Annex I: Call for ENDURE second internal mobility plan

Release date: 31 October 2007

Deadline for applications: 30 November 2007

The second internal mobility plan will involve only people from ENDURE partners. The implementation period runs from January 2008 to June 2009.

The total number of people included in the mobility plan is not predefined, but will be set in relation to the number of applications and their duration. Both junior and senior researchers will be involved. For each stage, the length of the mobility period is roughly set at one to two months for senior researchers and three to six months for junior researchers.

All researchers participating in the second mobility plan will have to comply with specific rules.

Rules and duties

The second mobility plan, running from January 1, 2008 through to June 30, 2009, will be open to candidates from ENDURE partners. The grant is intended to cover the costs of travelling and stay at the host institute, typically for a period of one to two months for experienced researchers and three to six months for junior researchers (PhD and new post-docs).

During the mobility period, the visiting researcher must continue to be employed by his/her sending institution, i.e. ENDURE does not pay any salary.

The project should be linked to a specific ENDURE activity and sub-activity(ies). The applicant should clearly state the relevance of his/her project to ENDURE activities.

Budget

Eligible costs will be:

- Travelling: one return travel from the sending to the hosting institution (max € 750)
- Accommodation and living expenses according to sending institution rules; however all costs should be documented.

To calculate the budget for each stay we roughly considered the monthly allowance used in the Marie Curie actions which are set according to the country of the hosting institution. The following contributions to expenses for the hosting institution have been decided:

- €500 per month for clearly-defined laboratory work
- €250 per month for a desk job

Bench-fees are not applicable to ENDURE mobility and the contribution to expenses will be directly included in the budget of the hosting institution. The budget for each researcher will be defined and communicated before the start of the mobility. The total number of people included in the annual mobility plan is not predefined, but will be set in relation to the number of applications and their duration.

Annex II: Table of the second mobility plan

Sending partner	Scientist name	Category	Topic	Hosting institute	Stay duration
AU	Solvejg Kopp Mathiassen	Senior scientist	Comparison of different diagnostic methods for herbicide resistance	RRES	2.5 months
AU	Gabor Lövei	Senior scientist	Evaluation of the arthropod community on transgenic tomato and/or eggplant using network analysis methods, with special reference to non-native arthropods in food webs connected to genetically modified crop plants.	SZIE	1.5 months
AGROS	Lisa Eggenschwiler	Junior Scientist	The value of 'non-cropped' land on farms for conservation biological control (sampling natural enemies on farms across the East of England that have contrasting crop and non-crop diversities and/or sampling soils in the different habitats for ascomycete fungi)	RRES/JKI	2.5 months
AGROS	José Hernandez	PhD student	Conducting a survey on farm level in Denmark, United Kingdom, The Netherlands and Germany, in order to make more precise and detailed economic description and analysis of different cropping systems and their respective crop protection methods, which are classified according with two dimensions of pesticide use: intensity (high and low) and innovation (high and low).	Univ. Berlin - AU - RRES - WUR	6 months
AGROS	Gabriele Mack	Senior scientist	Analysing risk-behaviour and the impact on crop protection strategies of pomefruit growers in the UK.	RRES	1 month
AGROS	Alexandre Aebi	Senior scientist	Application of population genetics to invading and emerging pests and to invading natural enemies (e.g. <i>Harmonia axyridis</i>)	INRA	1 month
AGROS	Daniel Baumgartner	Junior Scientist	Different test studies of RA3.4 (LCA of pest control strategies) in close collaboration with the crop specialists	UdL	1 month
AGROS	Frank Hayer	Junior Scientist	Different test studies of RA3.4 (LCA of pest control strategies for tomato) in close collaboration with the crop specialists	INRA	1 month
AGROS	Tomke Musa	Scientist	Factors influencing the epidemic of <i>Fusarium</i> head blight and assessments of common species by PCR methods	AU	1 month

AGROS	Martina Alig	Junior Scientist	Evaluation, implementation in the LCA tool SALCA of ART and application of the INRA-method IPHy for different test studies of RA 3.4 in close collaboration with the method developers.	INRA	1 month
AGROS	Thomas Kagi	Junior Scientist	Evaluation, implementation in the LCA tool SALCA of ART and application of the Danish method USEtox for different test studies of RA 3.4 in close collaboration with the method developers.	AU	1 month
JKI	Astrid Guenther	PhD	Basic conditions and requirements for training and certification of farmers, advisors and distributors for using plant protection products in ENDURE partner states	SZIE	1 month
JKI	Jörn Strassemeyer	Senior Scientist	SYNOPS model; implementation of data	AGROS	1 month
JKI	Silke Dachbrodt-Saaydeh	Scientist	A study exploring the management of information within the Organisation and the transfer of knowledge to different stakeholders outside the Organisation	RRES	1 month
JKI	A. Hertz	Post Doc	To define current constraints which hamper the practical implementation of promising biocontrol approaches in outdoor crops.	CIRAD	2 months
CNR	Laura Rosso	Post doc	Improvement of the efficiency of natural enemies of plant pests through characterization of foraging behaviour. Volatiles involved in long-range and short-range attractiveness towards insect parasitoids in a tritrophic contest	RRES	2 months
CNR	Emilio Guerrieri	Scientist	Practical aspects of microbial selections for control of main through the release of antagonists	RRES	1 month
CNR	Ivan Sartorato	Scientist	Biology and ecology of weed species, modelling of weed competitiveness in relation to species establishment and early growth. Protocols on ecophysiological characterisation of invasive species	RRES	2 months
CNR	Laura Scarabel	Scientist	Resistance to acetyl-CoA carboxylase inhibiting herbicides in grass weeds. Characterise the genetic and molecular target-site based resistance. Use of molecular tools to perform population genetic studies and to diagnose herbicide resistance	INRA	2 months

CNR	Alberto Collavo	Scientist	Resistance to glyphosate in grass weeds. Characterise the non-target-site based herbicide resistance. Use of biochemical tools to perform enzymatic studies and to diagnose herbicide resistance	Univ Cordoba	3 months
IHAR	Elzbieta Kochanska Czembor	Senior Scientist	Powdery mildew resistance genes in wheat and barley	AGROS	2 months
IHAR	Jerzy Henryk Czembor	Senior Scientist	Fusarium in maize	ACW Research Centre	2 months
IHAR	Pawel Czembor	Senior scientist	The ultimate goal of the visit is to conduct molecular analyses on <i>Mycosphaerella graminicola</i> isolates collected in experiments evaluating selection pressure on pathogen population	RRES	2 months
IHAR	Anna Agnieszka Przetakiewicz	Senior scientist	Detection, identification and diagnosis of plant pathogen using new and modern molecular and serological methods	WUR	3 months
IHAR	Lisowska Malgorzata	PhD student	Characterization, identification and detection of plant pathogens using new and modern molecular and serological methods.	WUR	3 months
IHAR	Tomasz Góral	Senior scientist	The main topic of the visit will be research on exploitation of resistance of wheat to Fusarium head blight and other important diseases for control and reduction of pesticides use.	AU	3 months
IHAR	Denise Fu Dostatny	Senior scientist	Relating assembly of weed communities to management and environment using information on plant functional traits. Two contrasting systems will be studied, Polish extensive production and UK intensive production.	RRES	1.5 months
INRA	Claude Compagnone	Scientist	This task aims at analysing, at an European comparative scale, the advisory services organisation, the advisors/farmers relations and the farmers decision-systems. The first step will be the deeper analysis of available data coming from a recent survey among 1200 Danish farmers and a review of surveys conducted in other member states. In a second phase, specific qualitative surveys will be conducted in all participating countries. The comparative work will	SSSUP	1 month

			be achieved by a post-doc hired in Denmark with the assistance of local researchers and students in other countries		
INRA	Naoufel Mzoughi	PhD student	Understanding what drives farmers to adopt integrated crop protection in a comparative way, i.e., between France, Netherlands and Spain	WUR	3 months
WUR	Marleen Riemens	PhD	Management of weeds in crop protection systems aimed at suppression of <i>Meloidogyne</i> species	SSSUP	3 months
WUR	M. Klerks	PHD	Risk analysis of the occurrence of the Human pathogens on fresh products using advanced detection and monitoring technologies.	AU	3 months
WUR	R. Trifonia	PHD	Evaluate application of a new environmentally friendly substrate in organic farming.	AGROS	3 months
WUR	Walter Rossing	Senior Scientist	The visits will contribute to reinforced information exchange on progress in functional biodiversity research as a cornerstone to better utilization of ecological processes at the landscape scale for pest suppression with minimum pesticide use.	INRA-AGROS-RRES	1 month
SSSUP	Souzi Rouphael	PhD student	Training about functional biodiversity, weed seed predation especially by rodents, classification of some invertebrates for seed predation and modelling approaches regarding these topics	UdL	3 months
SSSUP	Marco Fontanelli	PhD student	The aim of my visit to Denmark is to improve my knowledge about physical weed control strategies and machines (with particular attention to innovative tools for in-row weed control) and band steaming strategies.	AU	3 months
SSSUP	L. Boccaccio	PHD	Landscape and field effects on insect pests-natural enemies interactions.	AGROS	3 months
SZIE	Zita Dorner	Senior scientist	I would like to study the alternative methods of weed management during crop growing cycles, and the interactions between weed management and other cultural practices, (e.g. cover crops, intercropping, thermal weed control) at farm level, different cropping systems and at different landscape structure.	SSSUP	1 month

SZIE	Posta Katalin	Senior scientist	To study different new methods to follow epidemics of fungal cereal diseases.	RRES	1 month
SZIE	Zita Sasvari	PhD student	To study the different agricultural practices on the diversity of arbuscular mycorrhizal fungi.	CNR	3 months
SZIE	Nora Levay	PhD student	Analysing the possibilities of implementing a biodiversity assessment tool into SYNOPS and/or creating a platform where SYNOPS and biodiversity assessment tool can run cooperatively.	JKI	3 months
SZIE	Mark Szalai	PhD student	Surveying the spatiotemporal modelling possibilities in western corn rootworm population dynamics at landscape-scale	RRES	3 months
SZIE	Mihaly Zalai	PhD Student	I would like to study methods of mechanical weed control, instruments of mechanical weed control and to make international scientific relations	SSSUP	1 month
SZIE	G. Turoczi	Senior Scientist	Sharing knowledge on biological resources, standardization of methods.	RRES	1 month
UdL	Daniel Casado	Post-doc	Spatial distribution of codling moth within orchard	INRA	3 months

Annex III: Details of the mobility stages implemented during 2008

Sending partner	Scientist name	Category	Topic	Hosting institute	Stay duration
AU	Solvejg Kopp Mathiassen	Senior scientist	Comparison of different diagnostic methods for herbicide resistance	RRES	2.5 months
AGROS	Lisa Eggenschwiler	Junior Scientist	The value of 'non-cropped' land on farms for conservation biological control	RRES/JKI	2.5 months
AGROS	José Hernandez	PhD student	economic description and analysis of different cropping systems and their respective crop protection methods	Univ. Berlin - JKI	0.5 months
AGROS	Frank Hayer	Junior Scientist	Different test studies of RA3.4 (LCA of pest control strategies for tomato) in close collaboration with the crop specialists	INRA	1 month
JKI	Astrid Guenther	PhD	Basic conditions and requirements for training and certification of farmers, advisors and distributors for using plant protection products in ENDURE partner states	SZIE	1 month
JKI	Silke Dachbrodt-Saaydeh	Scientist	A study exploring the management of information within the Organisation and the transfer of knowledge to different stakeholders outside the Organisation	RRES	1 month
CNR	Laura Rosso	Post-doc	Improvement of the efficiency of natural enemies of plant pests through characterization of foraging behaviour. Volatiles involved in long-range and short-range attractiveness towards insect parasitoids in a tritrophic contest	RRES	3 months (two funded by ENDURE)
CNR	Emilio Guerrieri	Scientist	Practical aspects of microbial selections for control of main through the release of antagonists	RRES	1 month
CNR	Ivan Sartorato	Scientist	Biology and ecology of weed species, modelling of weed competitiveness in relation to species establishment and early growth. Protocols on ecophysiological characterisation of invasive	RRES	2 months

			species		
CNR	Laura Scarabel	Scientist	Resistance to acetyl-CoA carboxylase inhibiting herbicides in grass weeds. Characterise the genetic and molecular target-site based resistance. Use of molecular tools to perform population genetic studies and to diagnose herbicide resistance	INRA	2 months
CNR	Alberto Collavo	Post-doc	Resistance to glyphosate in grass weeds. Characterise the non-target-site based herbicide resistance. Use of biochemical tools to perform enzymatic studies and to diagnose herbicide resistance	Univ. Cordoba	1.5 (1.5 months are being implemented in 2009)
IHAR	Elzbieta Kochanska Czembor	Senior Sci.	Powdery mildew resistance genes in wheat and barley	AGROS	3 months
IHAR	Jerzy Henryk Czembor	Senior Sci.	Fusarium in maize	AGROS	2.5 months
IHAR	Pawel Czembor	Senior scientist	The ultimate goal of the visit is to conduct molecular analyses on <i>Mycosphaerella graminicola</i> isolates collected in experiments evaluating selection pressure on pathogen population	RRES	2 months
IHAR	Anna Agnieszka Przetakiewicz	Senior scientist	Detection, identification and diagnosis of plant pathogen using new and modern molecular and serological methods	WUR	3 months
IHAR	Lisowska Malgorzata	PhD student	Characterization, identification and detection of plant pathogens using new and modern molecular and serological methods.	PRI	3 months
SSSUP	Marco Fontanelli	PhD student	The aim of my visit to Denmark is to improve my knowledge about physical weed control strategies and machines (with particular attention to innovative tools for in-row weed control) and band steaming strategies.	AU	3 months
SZIE	Zita Dorner	Senior scientist	I would like to study the alternative methods of weed management during crop growing cycles, and the interactions between weed management and other cultural practices, (e.g. cover crops,	SSSUP	1 month

			intercropping, thermal weed control) at farm level, different cropping systems and at different landscape structure.		
SZIE	Nora Levay	PhD student	Analysing the possibilities of implementing a biodiversity assessment tool into SYNOPS and/or creating a platform where SYNOPS and biodiversity assessment tool can run cooperatively.	BBA	2.5 months
SZIE	Mark Szalai	PhD student	Surveying the spatiotemporal modelling possibilities in western corn rootworm population dynamics at landscape-scale	RRES	1.5 (the rest will be implemented in 2009)
UdL	Daniel Casado	Post-doc	Spatial distribution of codling moth within orchard	INRA	3 months

Annex IV: Call for ENDURE mobility scholarships for co-supervised PhD

Release date: 13 May 2008

Deadline for applications: 18 July 2008

Art. 1. Object

As part of the 2nd Joint Programme of Activities (January 2008-June 2009), ENDURE activity IA3 (Mobility) and sub-activity SA1.2 (Educational Programme) launch a call for applications for scholarships aimed to enforce mobility of PhD students working at ENDURE partner institutions.

Art. 2. Aims

The aim of ENDURE PhD Mobility Scholarships is to strengthen among-partner cooperation related to higher education activities at PhD level through the allocation of special mobility grants to students who are working towards their PhD at an institution which is an ENDURE partner as well as financial support to ensure co-supervision of PhD activities. The co-supervisor must work for the Institution hosting the PhD student.

Art. 3. Beneficiaries

Any PhD student working at an institution which is an ENDURE partner, including those whose application for mobility has already been approved by the leader of the ENDURE mobility programme (IA3), can apply for an ENDURE PhD Mobility Scholarship. Expected beneficiaries are PhD students enrolled in the first or second year of their programme, although this is not an absolute criterion for eligibility.

PhD students from INCO countries working at institutions which have formal collaborations with at least one ENDURE partner can also apply for the scholarship. A list of INCO countries can be accessed at:

ftp://ftp.cordis.europa.eu/pub/fp6/docs/wp/sp1/sp1_annexc_wp_200203_en.pdf

Art. 4. Prerequisites

Prerequisites for the allocation of ENDURE PhD Mobility Scholarships are:

- (a) that the scholarship will be entirely spent at a different ENDURE institution from the sending one;
- (b) that the student provides a short CV (max 2 pages) and a programme of (additional) research activities to be carried out at the hosting institution;
- (c) that the student attaches a motivation letter to her/his application;
- (d) that the student and her/his institution identifies a co-supervisor for the student's activities throughout her/his stay abroad;
- (e) that the aforementioned co-supervisor commits herself/himself to take part as member of the evaluation board for the PhD thesis defence at the student's home institution (an accompanying letter from the external supervisor must be enclosed);
- (f) that the sending institution commits to accept the hosting co-supervisor on the PhD evaluation board (an accompanying letter from the PhD board must be enclosed);
- (g) that the PhD research work should contribute to ENDURE objectives (explicit reference to relevant ENDURE sub-activities must be provided);

(h) PhD students from INCO countries must also include a letter from an ENDURE partner stating its formal collaboration with their home institution.

All information regarding points (a) to (h) must be included in the application.

Adequate financial resources will be provided to ensure accomplishment of co-supervision, as to points (e) and (f).

Art. 5. Application

PhD students wishing to apply for an ENDURE PhD Mobility Scholarship must fill in the relevant application form available online. There are two forms: one for PhD students coming from ENDURE partners (Application_formEND) or one for students from INCO countries (Application_formINCO).

All applications must be sent to **c.carbonaro@sssups.it**. Missing information will result in rejection of the application. The deadline for submitting the application is **Friday 18 July 2008**.

Art. 6. Scholarships

Two ENDURE PhD Mobility Scholarships will be allocated, following a joint evaluation procedure carried out by the leaders of IA3, SA1 and SA1.2. Each scholarship will have a minimum/maximum duration of 4/6 months. The eligible candidates will be published on the ENDURE website (IA3 webpages) by **Friday 1 August 2008**. The awarded students must confirm acceptance of the scholarship by sending an e-mail to **c.carbonaro@sssups.it** by **Friday 15 August 2008**.

Allocation of the ENDURE PhD Mobility Scholarships and the contribution to expenses to the hosting institution will follow the financial rules set forth in IA3 for the standard mobility grants.

Eligible costs will be:

- Travelling: one return travel from the sending to the hosting institution (max € 750).
- Accommodation and living expenses: according to sending institution rules; however all costs should be documented.

The budget for each stay is roughly calculated based on the monthly allowance foreseen in the Marie Curie actions, which are set according to the country of the hosting institution (http://ec.europa.eu/research/fp6/mariecurie-actions/action/fellow_en.html, see page 40 to the handbook). The following contributions to expenses for the hosting institution have been set forth:

- € 500 per month for clearly-defined laboratory or field work.
- € 250 per month for a desk job.

Bench-fees are not applicable to ENDURE mobility and the contribution to expenses will be directly allocated to the budget of the hosting institution.

A sum of € 1,500 will be allocated to each co-supervisor's institution as a contribution for the time spent and to cover travel/subsistence costs needed to take part in the PhD thesis evaluation board at the sending Institution. Money will be directly included in the budget of the co-supervisor's institution and all costs should be documented.

Art. 7. Obligations

The awarded students must comply with the same obligations set forth for beneficiaries of the IA3 mobility programme:

- At the end of the visit, the student must send via e-mail the final report (Final_report_PhD_scholarship) to **c.carbonaro@sssups.it**. The final report should be sent within 15 days from the end of her/his visit and will be published in the IA3 web pages.
- The student will be refunded by the sending institution only after the final report is jointly approved by the leaders of IA3, SA1 and SA1.2.

The ENDURE PhD Mobility Scholarships must be completed by **30 June 2009**.

Art. 8. Information requests

Any information requests should be sent to **c.carbonaro@sssups.it**.

Annex V: Call for mobility involving scientists from INCO countries

Release date: 13 June 2008

Deadline for applications: 9th August 2008

1. Introduction

As part of the 2nd Joint Programme of Activities (January 2008 - June 2009), ENDURE activity IA3 (Mobility), in collaboration with sub-activity SA3.2 (Foster the participation of research teams from INCO target countries), are launching an international call for applications for grants for **two scientists from INCO countries** who wish to spend a **period of up to three-months** working at one of the ENDURE research or university participant institutions.

2. Aim

Integration of research teams from INCO target countries is a priority of the ENDURE network. The aim of ENDURE - INCO grants is to foster an exchange of knowledge between INCO target countries and ENDURE partners in order to promote sustainable crop protection research/techniques and share experience of complex tropical crop-pest systems which may be of benefit to European agriculture.

3. Beneficiaries

The grants will be awarded to two scientists with a research position relevant to crop protection issues in one of the INCO countries who wish to spend a three-month period working at one of the ENDURE research (list is available at http://www.endure-network.eu/what_is_endure/participants/research_organisations) or university (list is available at http://www.endure-network.eu/what_is_endure/participants/universities) participant institutions. A list of INCO countries can be accessed at:

ftp://ftp.cordis.europa.eu/pub/fp6/docs/wp/sp1/sp1_annexc_wp_200203_en.pdf

4. Conditions for application

Conditions for application for ENDURE “ INCO” grants are:

a)the grants must be entirely used in connection with the stay at the ENDURE host research or university institution;

b)the research work should contribute to ENDURE objectives (explicit reference to relevant ENDURE activities and sub-activities must be provided).The list of ENDURE research activities and sub-activities is available at: http://www.endure-network.eu/what_is_endure/activities/joint_research_programme;

The applicant must:

- a) Provide a short CV (maximum 2 pages) and a programme of planned research activities to be carried out at the ENDURE hosting institution;
- b) Provide a letter of acceptance from the hosting institution, indicating the name and position of the supervisor;
- c) Attach to his/her application a description of the expected benefits from the stay at the host institution;
- d) Complete the application form available online (http://www.endure-network.eu/human_resources/staff_mobility/external_mobility) and send it to elisa.scanzi@ibaf.cnr.it; by the deadline of 9th August 2008.

Missing information will result in the application being rejected.

5. Grants

The ENDURE grants will be allocated, following a joint evaluation procedure conducted by the leaders of IA3 and SA3. The names of the successful candidates will be published on the ENDURE website (IA3 web pages) by **20th August 2008**. The successful applicants must confirm acceptance of the grant by sending an e-mail to elisa.scanzi@ibaf.cnr.it by **30th August 2008**.

Eligible costs are:

- Travel: one return trip from the home institution to the ENDURE hosting institution (max. 1,000 €)
- Accommodation and living expenses: according to ENDURE hosting institution rules; however, all costs should be documented

The **monthly allowance** will be adjusted according to the country of the ENDURE hosting institution but is likely to be about 2,000 €.

The following **contributions** to expenses for the hosting institution:

Max. 500 € per month for clearly-defined laboratory or field work

Max. 250 € per month for a desk job

Bench-fees are not applicable to ENDURE mobility and the contribution to expenses will be included to the ENDURE budget of the hosting institution.

Successful candidates will be notified immediately after the evaluation process.

Money will be transferred from the ENDURE hosting institution to the visiting researcher.

The hosting institution will withhold 20% of the grant until the IA3 leader has approved the final report.

6. Obligations

At the end of the visit, the grant holder must send his/her final report via e-mail (http://www.endure-network.eu/human_resources/staff_mobility/external_mobility) to the assistant of the ENDURE mobility leader (elisa.scanzi@ibaf.cnr.it) within 15 days from the end of his/her visit and will be published in the mobility web pages.

The mobility periods must be completed by **30th June 2009**.

7. Information

Information on ENDURE research activities and sub-activities is available at http://www.endure-network.eu/what_is_endure/activities/joint_research_programme

Requests for general information about this call should be sent to **elisa.scanzi@ibaf.cnr.it**

Requests seeking Information on and establishing contacts with specific ENDURE partners should be addressed directly to the relevant contact points for each institution for ENDURE mobility.

Annex VI: INCO researchers whose application was accepted

Researcher	Topic	Sending Institute	Hosting Institute
Reda Abdalla Abdelaziz	Use of natural metabolites from bacterial and plant origin to control parasitic weeds of the genera <i>Orobanche</i> and <i>Cuscuta</i>	Horticulture Research Institute – Cairo Egypt	Scuola Superiore Sant'Anna (SSSUP) – Pisa, Italy
Nadjia Zermane	Impact of weed management strategies on growth and quality of organic horticulture	Institut National Agronomique (INA) - Algiers, Algeria	CNR - Institute of Food Production Sciences (ISPA) – Bari, Italy

Attachment 1. Final activity report of the researchers



European Network for the durable exploitation of crop protection strategies

IA3 Activity: Human resource exchange

ENDURE – PhD Scholarship

Final activity report

(The form has to be filled in and sent to the activity leader – message should be sent to his p.a. elisa.scanzi@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: Anna Agnieszka Przetakiewicz

Professional status: *(PhD student, post-doc, junior or senior scientist)* senior scientist

Sending partner: Plant Breeding and Acclimatization Institute (IHAR)

Institute/Department/Research Unit: Department of Phytopathology

Address: *(street, postal code, city)* Radzikow, 05-870 Blonie

E-mail and phone number of the researcher: a.przetakiewicz@ihar.edu.pl

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: Plant Research International

Institute/Department/Research Unit: Biointeraction and Plant Health



Address: (*street, postal code, city*): **Drovendaalsesteeg 1, 6708 PB Wageningen**

Supervisor name*: **dr. ir. Rene van der Vlugt**

Supervisor e-mail*: **rene.vandervlugt@wur.nl**

Supervisor phone number*:

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: (*number of weeks or months*) **3 month**

Starting date: **01.09.2008**

Ending date: **30.11.2008**

4. Description of the activities and outcomes

Background and context: *maximum 10 lines*

Laboratory of Virology in Plant Research International in Wageningen is focused on viral plant pathogens, mainly on understanding virus-vector interaction, epidemiology, identification and characterisation of viruses such as pepino mosaic virus (PEPMV) and potato virus Y (PVY). Team of Dr. Rene van der Vlugt carry on investigations under infection symptoms on host and indicator plants, prepare biological and structural characteristics of viruses and optimize methods of pathogen purification. Most efforts are put on development and production of polyclonal antisera, positive control, tests and virus specific PCR primer sets necessary to genomic and molecular characterisation of viruses.

Objective: *maximum 10 lines*

Main aim of research was serological and molecular characterisation of PVY recombinants - NTN and Wilga using ELISA technique, RT-PCR and SEQAM reactions. Comparison of sequencing results was prepared with the aid of EditSeq, SeqMan and MegAlign programs. On basis highly homologous consensus sequences of all tested recombinants a new primer was designed.

Activities carried out: *maximum 20 lines*

Investigation carried out in PRI laboratory was focused on:

- observation of disease symptoms on indicator plants;
- purification of potato virus Y from tobacco plant tissue;
- set up of RT-PCR reaction, purification of PCR products and estimation of its weight;
- set up of SEQAM reaction and sequencing;
- alignment of consensus sequences creating on basis of 16 primers and distinguish of differences between NTN and Wilga recombinants.

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

My research activities in ENDURE network is strictly connected with identification and characterisation of nematodes contains to Globodera species using molecular methods. The techniques I've learned in Bointeraction and Plant Health Laboratory in PRI is common both for viruses and nematodes. With the used of RT-PCR and sequencing reaction there is possible to distinguish between pathotype of *Globodera rostochiensis* and *G. pallida* and looking for differences inside of species.

6. Impact

Added value for the researcher: *maximum 10 lines*

The main advantage of 3 month scholarship in Wageningen was learning and understanding of use of molecular and serological techniques such as RT-PCR, ELISA and SEQAM. Work with sequencing of virus recombinants and comparison of obtained data with the aid of sophisticated computer programs learn me how to set up all steps in turn to get promising results. The most value for me personally was meeting friendly people working with me who help me to understanding how to work with viruses and postpone this knowledge on my scientific work with nematodes.

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

For sending partner: Improvement in understanding and using of RT-PCR and sequencing reaction to recognition of differences of tested samples.

For hosting partner: Estimation of differences between 17 recombinants of PVY virus on basis sequencing reaction with the use of 16 specific primers.

Date of submission

2008-12-09



Dr. Maurizio Sattin
IA3 activity leader

Approved



European Network for the durable exploitation of crop protection strategies

IA3 Activity: Human resource exchange

ENDURE - Internal Mobility

Final activity report

(This form has to be completed and sent to the activity leader – the message should be sent to his p.a. elisa.scanzi@ibaf.cnr.it – within 15 days of the end of the visit)

Topic of the visit

The ultimate goal of the visit is to conduct molecular analyses on *Mycosphaerella graminicola* isolates collected in experiments evaluating selection pressure on pathogen population exerted by different wheat quantitative resistance loci combinations.

1. Information about researcher and sending partner

Name and surname: Pawel Czembor

Professional status: Senior Scientist

Sending partner: Plant Breeding & Acclimatization Institute (IHAR)

Institute/Department/Research Unit: Plant Pathology Department

Address: Radzikow, 05-870 Blonie, Poland

E-mail and phone number of the researcher: p.czembor@ihar.edu.pl, (+48) 22 7253611 extn. 302 or 250

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: Rothamsted Research

Institute/Department/Research Unit: Department of Plant Pathology and Microbiology

Address: Rothamsted Research, Harpenden, Hertfordshire, AL5 2JQ, UK

Supervisor name*: Hai-Chun Jing

Supervisor e-mail*: hai-chun.jing@bbsrc.ac.uk

Supervisor phone number*: + 44 (0) 1582 763 133

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: 2 months

Start date: June 7, 2008

End date: August 7, 2008

4. Description of the activities and outcomes

Background and context:

Plant genetic resistance is one of the means to improve crop protection against pests and diseases. Resistance durability is a key aspect to be considered in crop protection strategy. This can be measured by changes in pathogen population under selection pressure exerted by host resistance.

In Liwilla wheat cultivar several QTLs associated with resistance to *Mycosphaerella graminicola* (Septoria tritici blotch) have been detected. QTLs located on chromosomes 7A and 1B are effective both at seedling and adult plant stage. Each of these QTLs explained phenotypic variation in range 20-30%. We would like to assess selection pressure on defined pathogen population (5 isolates) exposed to different combinations of quantitative resistance loci (four QTL combinations and two parental lines).

Objective:

Few parameters were used to describe results of the experiment, among them frequency of each isolate in the derived collection of isolates. The ultimate goal of the visit at Rothamsted was to select suitable molecular technique and genotype set of the *M. graminicola* isolates collected in the experiment.

Activities carried out:

Set of 274 *M. graminicola* isolates collected in the experiment carried out in Poland, was increased on suitable media and DNA extracted. Five isolates used in the experiment (inoculation with defined pathogen population) were first examined for DNA polymorphism using set of 21 microsatellites (SSRs) markers amplified in PCR (Goodwin et al. 2007). PCR products were separated and detected using LI-Cor 4300 instruments. Combination of two SSRs (loci ac-0007 and tcc-0008) could distinguish 5 original isolates. These SSRs were used to genotype 271 isolates (three isolates were accidentally lost).

Reference

Goodwin S.B., T.A.J. van der Lee, J.R. Cavaletto, B. te Lintel Hekkert, Ch.F. Crane, G.H.J. Kema 2007. Identification and genetic mapping of highly polymorphic microsatellite loci from an EST database of the septoria tritici blotch pathogen *Mycosphaerella graminicola*. Fungal Genetics and Biology 44: 398–414

5. Links between visit activity and ENDURE

Visit was related to the 2nd Joint Programme of Activity running under RA4.2 – Exploitation of plant genetic resistance. During my stay at Rothamsted I complemented results of experiments carried out in Poland for task TR 4.2a – Selection Pressure (see details above).

6. Impact

Added value for the researcher:

In the Department of Plant Pathology and Microbiology (PPM, Rothamsted) scientists carry research on many topics ranging from fundamental work on how pathogens cause disease, using the latest genomic approaches to identify genes and processes involved in pathogenicity, to applied projects on the diagnosis and practical management of diseases in the crop. It was great opportunity to interact with PPM scientists and discuss topics related to my pathosystem wheat-*Mycosphaerella graminicola* (I had internal seminar providing information on my research). During my stay I could work in the laboratory to accomplish my experiments that gave me possibility to exchange information on new molecular techniques and acquire practical tips never published. Finally, I have found invaluable personal relationships established that foster possible future cooperation on currently running and future projects.

Added value for sending partner and hosting partner:

All experiences described for the researcher can be transferred on partner's level. For partners cooperation the most important are experience of scientists and common research questions to answer. Working together on common pathosystems gave unique chance to explore possibility to setup new common projects for both partners.

Date of submission

September 19, 2008



Dr. Maurizio Sattin
IA3 activity leader

Approved



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. elisa.scanzi@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: Elzbieta Kochanska - Czembor

Professional status: *(PhD student, post-doc, junior or senior scientist):* senior scientist

Sending partner:

Institute/Department/Research Unit: Plant Breeding and Acclimatization Institute

Address: *(street, postal code, city)* IHAR – Radzikow, 05 – 870 Blonie, Poland

E-mail and phone number of the researcher: e.czembor@ihar.edu.pl

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:

Institute/Department/Research Unit: Agroscope Changins-Wadenswill Research Station ACW in Switzerland; ACW Research Centre Changins / Plant Pathology Department

Address: *(street, postal code, city)* P.O. Box 1012; 1260 Nyon 1

Supervisor name*: Stephanie Schürch

Supervisor e-mail*: Stephanie.schuerch@acw.admin.ch

Supervisor phone number*: +41 22 3634375

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: (*number of weeks or months*): 13 weeks

The visit was divided to 3 parts and prolonged to the 24 months of the ENDURE project duration – with knowledge and acceptance of Coordinator of IA3 Prof. Maurizio Sattin, Coordinator of Agroscope Dr Franz Bigler and Coordinator of IHAR Prof. Edward Arseniuk.

Starting date: 10.02.08 – 17.02.08; 29.06 – 21.08.08; 1.11.08 – 29.11.08;

Ending date:

4. Description of the activities and outcomes

Background and context: *maximum 10 lines*

Ear rot of maize caused by *Fusarium* spp. is one of the most important diseases in EUROPE which reduce grain yield and quality. Infection of this fungus is causing the contamination of grains with mycotoxins. This renders the harvest to non-marketable and poses health risks in feed and food products. Knowledge of pathogenicity, aggressiveness and mycotoxin production of *Fusarium* spp. is important in developing resistant germplasms and in estimating durability of resistance. The results of the preliminary experiments obtained in Polish Plant Breeding and Acclimatization Institute and Agroscope Changins-Wädenswill Research Station ACW in Switzerland showed that the experiments which will help to understand the maize – *Fusarium* spp. interaction must be conducted in Poland and Switzerland under field condition and after inoculation. Based on this fact it become clear that - to be more reasonable from the scientific point of view this particular human resource exchange scheduled for the first 18 month should be prolonged to the 24 months of the ENDURE project duration.

Objective: *maximum 10 lines*

1. Set up a map of *Fusarium* spp. species occurring on maize in Poland and Switzerland.
2. In context of to maize – wheat crop rotation – to compare the species and subspecies preferences on wheat and on maize
3. Study the impact of naturally occurring *Fusaria* spp. by symptom development and mycotoxin charge in grains.
4. To compare methods used in Agroscope and IHAR for field and lab evaluation of *Fusarium* diseases on maize and wheat

Activities carried out: *maximum 20 lines*

- comparison of the *Fusarium graminearum* isolates collected in Poland and Switzerland aggressiveness based on the laboratory experiments conducted on Polish and Switzerland varieties (in Poland)

- developing of a reproducible methodology to evaluate the resistance of maize varieties. The experiments were conducted after inoculation by *Fusarium* spp. under Polish and Switzerland field condition.
- rank the varieties which grown in Switzerland and in Poland according to their susceptibility after inoculation by *Fusarium* spp. under Polish and Switzerland field condition
- determine mycotoxin contamination using three methods: ELISA, HPCL and SmartNose

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

Visit corresponding to the following ENDURE activities and sub-activities:

IA 2. Creation of a virtual laboratory in crop-pest control
 IA 2.3. Standardisation of methods and protocols
 IA 4. Integrated knowledge and communication
 IA 4.1 Integrated knowledge management
 IA 4.2 Reinforce communication inside the network
 RA 1. Optimising and reducing pesticide use
 RA 1.2 Implementation of the case studies (maize and wheat)
 RA 2. Designing innovative crop protection strategies
 RA 2.1 Prevention of pest incidence
 RA 2.2 Exploitation of innovative technologies
 RA 3. Multicriteria Assessment of crop protection methods and cropping systems
 RA 3.1 Specific and general surveillance of pest incidence
 RA 4 Improving the basic understanding of the biology of crop-pest systems
 RA 4.1 Pesticide resistance management
 RA 4.2 Exploitation of plant genetic resistance

6. Impact

Added value for the researcher: *maximum 10 lines*

Standardisation of methods and protocols which will help to develop the better knowledge of pests and better understanding of their interactions with plants and natural enemies:

- a. monitoring of *Fusarium* spp. and epidemiology (specific and general surveillance of pest incidence)
- b. determination of maize ear rot resistance after inoculation by *Fusarium* spp. under field condition (improving the basic understanding of the biology of crop-pest systems, pesticide resistance management, exploitation of plant genetic resistance)
- c. determination of *Fusarium* spp. mycotoxin contamination using ELISA and HPLC methods
- d. developing of new innovative Smartnose method used for determination of *Fusarium* spp. mycotoxin contamination – standardization (designing innovative crop protection strategies, Prevention of pest incidence, exploitation of innovative technologies)

The attained knowledge and experience have great impact and potential for achieving ENDURE objective by designing new control methods of *Fusarium* spp. in maize.

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

Standardisation of methods and protocols used in Agroscope and IHAR which will help to develop the better knowledge of pests and better understanding of their interactions with plants and natural enemies:

- a. monitoring of *Fusarium* spp. and epidemiology conducted by Agroscope and IHAR in Poland and Switzerland
- b. determination of maize ear rot resistance after inoculation by *Fusarium* spp. under field condition using the standard methods of by Agroscope and IHAR in Poland and Switzerland
- c. determination of *Fusarium* spp. mycotoxin contamination methods used by Agroscope and IHAR in Poland and Switzerland

Date of submission

14.12.2008



Dr. Maurizio Sattin
IA3 activity leader

Approved



European Network for the durable exploitation of crop protection strategies

IA3 Activity: Human resource exchange

ENDURE - Internal Mobility

Final activity report

(This form has to be completed and sent to the activity leader – the message should be sent to his p.a. elisa.scanzi@ibaf.cnr.it – within 15 days of the end of the visit)

LCA and pesticide impact calculation of tomato greenhouse production

1. Information about researcher and sending partner

Name and surname: Frank Hayer

Professional status: Junior scientist

Sending partner: AGROS

Institute/Department/Research Unit: Research Department: *Biodiversity and Environmental Management*, Research Group: *Life Cycle Assessment*

Address: Reckenholzstr. 191, 8046, Zürich, Switzerland

E-mail and phone number of the researcher: Frank.Hayer@art.admin.ch, 0041 44 377 71 26

Supervisor name*: Gérard Gaillard

Supervisor e-mail*: gerard.gaillard@art.admin.ch

Supervisor phone number*: 0041 44 377 73 50

2. Information about hosting partner

Hosting partner: INRA Sophia-Antipolis

Institute/Department/Research Unit: URIH

Address: 400, route des Chappes, BP 167, 06903 Sophia-Antipolis

Supervisor name*: Thierry Boulard

Supervisor e-mail*: thierry.boulard@sophia.inra.fr

Supervisor phone number*: 0033 49 23 86 66 3

3. Information about the visit

Duration: 1 month

Start date: 16.06.08

End date: 11.07.08

4. Description of the activities and outcomes

Background and context:

The overall subject of the activity RA3 is the multicriterion assessment of crop protection methods and cropping systems. RA3.4 contributes to this goal with LCA calculations estimating the environmental impacts from the whole production stage. One of the activities of RA3.4 (in M19-M30) is the calculation of ecoefficiency (TR3.4c) for tomatoes (and other crops). But there are only few data available for tomato production in greenhouses which could be used in LCA; this complicates the calculation of environmental impacts. Therefore cooperation is needed between a group assessing the inventories of glasshouses UHRI (Unité de Recherches Intégrées en Horticulture at INRA Sophia-Antipolis) and a group with experience in LCA.

Objectives:

1. To calculate the LCA for three different tomato production systems with a focus on pesticide use.
2. To conduct a literature review on pesticide emissions from greenhouses and pesticide concentrations in the working environment of greenhouses.
3. To calculate the ecotoxicity for the production systems due to pesticide use with the methods EDIP, CML, USES if possible.

Activities carried out:

1. The calculation of the LCA for the different tomato production systems was nearly finished during the visit, in cooperation with Caroline Raeppl a master student from ULP Strasbourg. A meeting between both partners will take place in September to present the final results and to plan further cooperation and publishing.
2. To literature review results in using the HAIR indicators for pesticide risk (developed within the EU 6th Framework Programme) to estimate the impact on greenhouse workers. Pesticide emissions from the greenhouse have been calculated using a model developed by Hauschild and adapted to greenhouses by Antón et al. (2004).
3. Finally the ecotoxicity due to pesticide use were calculated using the Methods EDIP, CML and IMPACT and the emissions estimated with the model from Antón et al. (2004).

Anton, A., Castells, F., Montero, J.J., Huijbregts, M. (2004): Comparison of toxicological impacts of the integrated and chemical pest management in Mediterranean greenhouses. *Chemosphere*, Vol. 54, 1225-1235.

Garreyn, F., Vagenende, B., Steurbaut, W. (2001): HARmonised environmental Indicators for pesticide Risk "Occupational" indicators: Operator, worker and bystander, Report financed by the EU sixth Framework Programme, Contract number SSPE-CT-2003-501997

5. Links between visit activity and ENDURE

For the reasons described above the cooperation with the UHRI was started. On the one hand they have the knowledge about the production in greenhouses and they collected data for the structure of greenhouses and the production of tomatoes. But on the other hand they have to calculate a LCA and are not experienced in this analysis. Therefore the cooperation was advantageous for both sides. The RA3.4 could benefit from the knowledge in greenhouse tomato production of the UHRI group which in turn could profit from the LCA experience of the RA3.4. Finally this exchange provides the RA3.4 with data to calculate the ecoefficiency of different tomato production systems and fulfil the activity TR3.4c.

6. Impact

Added value for the researcher:

- the intensification of the contact to UHRI at INRA Sophia-Antipolis
- the use of a new model to calculate the risk for greenhouse workers and the calculation of pesticide emissions from closed systems and the resulting knowledge about data needed and sources for these data.
- the chance to learn something about workaday life in France
- the possibly resulting publication and finally

Added value for sending partner and hosting partner:

See Chapter 5

Date of submission

31.07.2008



Dr. Maurizio Sattin
IA3 activity leader

Approved



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. elisa.scanzi@ibaf.cnr.it – within 15 days after the end of the visit)

Topic of the visit

Spatial distribution of ALS resistance gene in *Alopecurus myosuroides*

1. Information about researcher and sending partner

Name and surname: Laura Scarabel

Professional status: Scientist

Sending partner: CNR

Institute/Department/Research Unit: CNR - Institute for Agro environmental and Forest Biology (IBAF)

Address: Viale dell'Università 16, 35020 Legnaro (PD)

E-mail and phone number of the researcher: laura.scarabel@ibaf.cnr.it
Tel. +39 049 8272822

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: INRA

Institute/Department/Research Unit: Biologie et Gestion des Adventices (BGA)

Address: 17, rue Sully
F-21000 Dijon
France

Supervisor name*: Christophe Délye

Supervisor e-mail*: delye@dijon.inra.fr

Supervisor phone number*: +33 380 693 185

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: 2 months

Starting date: 2/10/08

Ending date: 2/12/08

4. Description of the activities and outcomes

Background and context: *maximum 10 lines*

To develop measures to prevent or delay the herbicide resistance, it is important to unravel the genetic basis of herbicide resistance and to understand how resistance genes evolve and spread in the field. There is a need to investigate the spatial distribution of clearly identified resistance genes in weeds. Acetolactate synthase (ALS) resistance is widespread in several European countries involving different weed species. At the BGA-Dijon, ALS-resistant populations of *Alopecurus myosuroides* have been sampled in different wheat crop areas in the north-eastern of France and the mutations in the ALS gene endowing resistance have been individuated.

Objective: *maximum 10 lines*

The objective was to investigate the spatial distribution of the identified ALS resistant genes in *Alopecurus myosuroides* populations.

Activities carried out: *maximum 20 lines*

During the first month of the stay, the activities were carried out in the laboratory where the analyses have included the genomic amplifications of the ALS gene, the cloning and the sequencing of the gene of interest. The sequences obtained have been the basis for subsequent nucleotide diversity analysis and the study of the spatial distribution of the polymorphism.

An important part of time was dedicated to learn the use of different software (Bioedit, DNASP) and to understand different statistic tests (Tajima's D statistic, Fay and Wu's H test, Mantel test). The analyses performed permit to determine whether the resistance genes

appear once and spread through gene flow, or whether multiple, independent appearances of a given resistance gene occur in distinct *Alopecurus myosuroides* populations.

5. Links between visit activity and ENDURE

The visit addresses to Research activity 4.1: Pesticide resistance management.

6. Impact

Added value for the researcher: *maximum 10 lines*

The stay in Dijon allowed to introduce myself on the study of population dynamics and to learn the use of specific software related to this topic. The stay was fruitful to know and compare different molecular techniques used in the BGA laboratory.

Besides the activity previously described, there has been various opportunity for fruitful discussions on the various BGA research activities and for establishing relationship with other researchers.

It has been a great experience to take part in life and research in this laboratory.

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

The stay has been fruitful for both partners and has been a good opportunity to share the respective knowledge on molecular techniques applied to the study of herbicide resistance.

Both sending and hosting partners believe that the relationship established during the visit will lead to future collaborations; a concrete possibility for a joint work has been defined.

Date of submission

19.12.2008



Dr. Maurizio Sattin
IA3 activity leader

Approved



European Network for the durable exploitation of crop protection strategies

IA3 Activity: Human resource exchange

ENDURE - Internal Mobility

Final activity report

(This form has to be completed and sent to the activity leader – the message should be sent to his p.a. elisa.scanzi@ibaf.cnr.it – within 15 days of the end of the visit)

Topic of the visit

Spatial distribution of codling moth within orchard

1. Information about researcher and sending partner

Name and surname: Daniel Casado González

Professional status: *(PhD student, post-doc, junior or senior scientist)*
Post-doc

Sending partner:
Universitat de Lleida (University of Lleida)

Institute/Department/Research Unit:
Producció Vegetal i Ciència Forestal (Department of Crop and Forest Sciences)

Address: *(street, postal code, city)*
Av. Rovira Roure, 191, E-25198 Lleida (Spain)

E-mail and phone number of the researcher:
daniel.casado@pvcf.udl.cat
+34 635 51 46 32

Supervisor name*:
Jesús Avilla

Supervisor e-mail*:
jesus.avilla@irta.es



Supervisor phone number*:

+34 973 70 25 81

*Supervisor information only for PhD student, post-doc and junior researchers

2. Information about hosting partner

Hosting partner:

INRA-Avignon

Institute/Department/Research Unit:

Plant et Systèmes de Culture Horticoles

Address: *(street, postal code, city)*

site Agroparc, F-84914 Avignon cedex 9, France

Supervisor name*:

Claire Lavigne

Supervisor e-mail*:

claire.lavigne@avignon.inra.fr

Supervisor phone number*:

+33 (0) 432 722 666

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: *(number of weeks or months)*

3 months

Start date:

7 January 2008

End date:

3 April 2008

4. Description of the activities and outcomes

Background and context: *maximum 10 lines*

There is an increasing interest on the spatial distribution of pests at landscape level, as well as on the study of the factors that influence it. *Cydia pomonella* is a key pest of pomefruit in almost all pomefruit production areas. During the seasons of 2006 and 2007, Dr. Claire Lavigne's group at INRA-Avignon have sampled *C. pomonella* larvae and their parasitoids in more than 80 apple and pear orchards in the Vallée de Durance, in South-eastern France. These samples were made by placing corrugated cardboards on tree trunks, which were georeferenced. On the other hand, the landscape was also georeferenced, including hedgerows, crop distribution, urban areas, roads and paths, and many other landscape elements. Special attention was paid to hedgerows, which were not only georeferenced, but also described regarding to their height, thickness and composition.

Objective: *maximum 10 lines*

The main objective of the stay was to advance in the analysis of the spatial distribution of *C. pomonella*, and their larval parasitoids, distribution within orchards, and the factors that can influence it.

Activities carried out: *maximum 20 lines*

All the activities carried out during the stay were related to the data processing and analysis. The first step was to get familiarized with the GIS software and the possibilities that it gives. I learnt the use of this software both to introduce and to manage data. A series of parameters that were considered *a priori* as factors influencing larval distribution were calculated: distances to the closest hedgerow; density of abandoned, organic or conventional managed orchards, distance to isolated hosts; and others.

Data analysis was decided to be started by checking the existence or not of aggregation. This analysis was done by the construction of both a map of sampling density and capture density for each orchard. These maps were constructed by means of a 2 x 2 m grid and a smoothing function. An important part of time was dedicated to understand how the smoothing parameter in this function influenced the obtained maps and in consequence the outcome of the statistical analysis. Finally, both maps were compared through the Hellinger's distance, which tests if 2 density maps are distributed in the same way.

A few simulations were also run to compare our method analysis with SADIE, which is very often used to study aggregation. SADIE works on distance to the uniform and the completely aggregated distributions, and it does not directly involve sampling distribution.

Finally, a similar algorithm was used to compare *C. pomonella* larval and parasitoid densities.

I will keep in touch with my hosting group to further study the influence of landscape features on *C. pomonella* distribution, and differences between SADIE and our method. We expect to later write a scientific manuscript.

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

My activity in the INRA-Avignon is related with several ENDURE sub-activities. From my point of view it has been an important training for me as a junior researcher, and in this way it can clearly match with SA1 'Joint training and education programmes'. On the other hand, the topic of my activity is related with RA1.2 'Pomefruit CS', RA2.5 'Orchard System Study', RA2.3 'Exploitation of Landscape and Community Ecology'. Both UdL and INRA-Avignon are involved in these activities.

The relevance for SA1 is related to the training and education of junior scientist, as I finished my PhD last year, and I consider that I am still under formation as a future researcher. The Pomefruit CS was focused on two diseases and *C. pomonella*, which is the most important pest of these crops worldwide. Important information has been collected about *C. pomonella* control through Europe, and a necessity of taking into account wider areas for decision making has been pointed out. In this way, in the coming soon RA2.5 aspects of landscape distribution and area-wide management of *C. pomonella* will be studied and discussed. Finally, in RA2.3 those aspects will be also dealt.

I also consider that my stay will strengthen the relationship between my group in UdL and INRA-Avignon.

6. Impact

Added value for the researcher: *maximum 10 lines*

My stay in Avignon allowed me to introduce on spatial analysis of pest distributions. Previously I had not expertise at all in this kind of experiments. During my stay I have learnt important concepts of experiment design, data handling, and data analysis in this field.

On the other hand, the stay has allowed me to establish relationships with other researchers that work on the same pests and crops than I do. These relationships are not only useful to enrich my know ledges and training, and to see new approaches and points of view, but also they will facilitate future cooperations.

Finally, I had the opportunity of improving my French level, what can facilitate my interactions with other researchers and stakeholders, especially in Europe.

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

The research group of the University of Lleida (sending partner) has been working on the study of the spatial distribution of pests using a different approach; the use of Geostatistics. The knowledge acquired by Dr. Casado is then complementary and will be of help for further development of our data analysis.

On the other hand, the group at INRA-Avignon has benefit from the expertise of Dr. Casado in *C. pomonella* topics. He also gave a different point of view and some good ideas for the analysis of data, and the parameters to be considered as distribution-influencing.

Date of submission

April 18th, 2008



Dr. Maurizio Sattin
IA3 activity leader

Approved



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. elisa.scanzi@ibaf.cnr.it – within 15 days after the end of the visit)

Topic of the visit

Practical aspects of microbial selections for control of main through the release of antagonists

1. Information about researcher and sending partner

Name and surname: Emilio Guerrieri

Professional status: *(PhD student, post-doc, junior or senior scientist)* Senior scientist

Sending partner: CNR

Institute/Department/Research Unit: IPP

Address: *(street, postal code, city)* Via Università 133 80055 Portici Italy

E-mail and phone number of the researcher: guerrieri@ipp.cnr.it, +390817753658

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: John A. Pickett

Institute/Department/Research Unit: Rothamsted Research

Address: (*street, postal code, city*) Harpenden Herts AL5 2JQ UK

Supervisor name*: John A. Pickett

Supervisor e-mail*:john.pickett@bbsrc.ac.uk

Supervisor phone number*:+441582 763133

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: (*number of weeks or months*) 1 month

Starting date: 10.5.2008

Ending date: 7.6.2008

4. Description of the activities and outcomes

Background and context: The attractiveness of antagonists of herbivore insects is regulated by the emission of volatile compounds by herbivore-infested plants

Objective: - learning and use of the most updated techniques to collect and analyse the volatile compounds released by plants that regulate the multitrophic interactions with herbivore insects and their natural enemies, including: single leaf air entrainment, gas chromatography and mass spectrometry

- preparation and use of standard solutions to be tested in wind tunnel bio-assay for their attractiveness towards natural enemies of aphids

- learning and use of the most updated techniques for the analysis of parasitoid antennal response towards plant-derived compounds, including: electroantennogram, coupled EAG and gas chromatography, single cell EAG.

Activities carried out:

- collection and analysis of volatile compounds from TOMATO plants infested by aphids
- electroantennogram test for assessing the responsiveness of *Aphidius ervi* (a parasitoid of tomato aphids) to compounds identified from tomato plants

5. Links between visit activity and ENDURE

The activity has been carried out in the framework of the case study TOMATO

6. Impact

Added value for the researcher:

Contacts have been established with researchers at BCH for the submission of research projects within the 7FP in the topic of the sustainable defence of agricultural crops from insect pests (push and pull; augmentation of bio-control agents; augmentation of the fitness of bio-control agents)

A paper has been prepared and submitted to Journal of Chemical Ecology

Added value for sending partner and hosting partner:

Re-enforcement of a long dated collaboration that has been extremely fruitful in term of publications and production of results that care of immediate application in the sustainable control of aphid pests

Date of submission
June 2008



Dr. Maurizio Sattin
IA3 activity leader

Approved



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. elisa.scanzi@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: JERZY H. CZEMBOR

Professional status: *(PhD student, post-doc, junior or senior scientist)*

Senior scientist

Sending partner:

Institute/Department/Research Unit:

IHAR – Plant Breeding and Acclimatization Institute

Address: *(street, postal code, city)*

05-870 Blonie, POLAND

E-mail and phone number of the researcher:

j.h.czembor@ihar.edu.pl ; + 00 48 22 796 33 73

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:

Swiss Federal Research Station for Agroecology and Agriculture FAL - AGROSCOPE

Institute/Department/Research Unit:

ACW Research Centre Changins

Address: *(street, postal code, city)*

P.O. Box 1012
1260 Nyon 1
Switzerland

Supervisor name*:

Fabio Mascher-Frutschi

Supervisor e-mail*:

fabio.mascher@acw.admin.ch

Supervisor phone number*:

+ 00 41 22 363 47 33

* For **senior scientist** indicate the name of the collaborating colleague

3. Information about the visit

Duration: *(number of weeks or months):* 11 weeks

The visit was divided to 3 parts and prolonged to the 24 months of the ENDURE project duration – with knowledge and acceptance of Coordinator of IA3 Prof. Maurizio Sattin, Coordinator of Agroscope Dr Franz Bigler and Coordinator of IHAR Prof. Edward Arseniuk.

Starting date: 10.02.08 – 17.02.08; 29.06 – 21.08.08; 1.11.08 – 16.11.08;

Ending date:

4. Description of the activities and outcomes

Background and context: *maximum 10 lines*

Diseases caused by *Fusarium* spp. On wheat and maize are very important economically in Europe because they significantly reduce grain yield and quality. Infection of this fungus is causing the contamination of grains with mycotoxins. This renders the harvest to non-marketable and poses health risks in feed and food products. Knowledge of pathogenicity, aggressiveness and mycotoxin production of *Fusarium* spp. is important in developing resistant germplasms and in estimating durability of resistance both in maize and wheat. The results of the preliminary experiments obtained in Polish Plant Breeding and Acclimatization Institute and Agroscopie Changins-Wadenswill Research Station ACW in Switzerland showed, that the experiments which will help to understand the maize and wheat – *Fusarium* spp. interaction must be conducted in Poland and Switzerland under field condition and after inoculation. Based on this fact it become clear that - to be more reasonable from the scientific point of view this particular human resource exchange scheduled for the first 18 month should be prolonged to the 24 months of the ENDURE project duration.

Objective: *maximum 10 lines*

5. Set up a map of *Fusarium* spp. species occurring on maize and wheat in Poland and Switzerland.
6. In context of to maize – wheat crop rotation – to compare the species and subspecies preferences on wheat and on maize.
7. Study of the impact of naturally occurring *Fusaria* spp. by symptom development and mycotoxin content in grains.
8. To compare methods used in Agroscopie and IHAR for field and lab evaluation of *Fusarium* diseases on maize and wheat.

Activities carried out: *maximum 20 lines*

- developing of a reproducible methodology to evaluate the resistance of wheat varieties. The experiments were and also will be conducted after inoculation by *Fusarium* spp. under Polish and Switzerland field condition.
- rank the wheat and maize varieties which are grown in Switzerland and in Poland according to their susceptibility after inoculation by *Fusarium* spp. under Polish and Switzerland field condition
- determine mycotoxin contamination using three methods: ELISA, HPCL and SmartNose

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

Visit corresponding to the following ENDURE activities and subactivities:

- IA 2. Creation of a virtual laboratory in crop-pest control
- IA 2.3. Standardisation of methods and protocols
- IA 4. Integrated knowledge and communication
- IA 4.1 Integrated knowledge management
- IA 4.2 Reinforce communication inside the network
- RA 1. Optimising and reducing pesticide use
- RA 1.2 Implementation of the case studies (maize and wheat)
- RA 2. Designing innovative crop protection strategies
- RA 2.1 Prevention of pest incidence
- RA 2.2 Exploitation of innovative technologies
- RA 3. Multicriteria Assessment of crop protection methods and cropping systems
- RA 3.1 Specific and general surveillance of pest incidence
- RA 4 Improving the basic understanding of the biology of crop-pest systems
- RA 4.1 Pesticide resistance management
- RA 4.2 Exploitation of plant genetic resistance

6. Impact

Added value for the researcher: *maximum 10 lines*

Standardisation of methods and protocols which will help to develop the better knowledge of pests and better understanding of their interactions with plants and natural enemies:

- e. monitoring of *Fusarium* spp. and epidemiology (specific and general surveillance of pest incidence)
- f. determination of *Fusarium* spp. mycotoxin contamination using ELISA and HPLC methods
- g. developing of new innovative Smartnose method used for determination of *Fusarium* spp. mycotoxin contamination – standardization (designing innovative crop protection strategies, Prevention of pest incidence, exploitation of innovative technologies)

The attained knowledge and experience have great impact and potential for achieving ENDURE objectives mainly by designing new control methods of *Fusarium* spp. in maize.

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

Standardisation of methods and protocols used in Agroscope and IHAR which will help to develop the better knowledge of pests and better understanding of their interactions with plants and natural enemies:

- d. monitoring of *Fusarium* spp. and epidemiology conducted by Agroscope and IHAR in Poland and Switzerland both on wheat and maize
- e. determination of maize ear rot resistance after inoculation by *Fusarium* spp. under field condition using the standard methods of by Agroscope and IHAR in Poland and Switzerland
- f. determination of *Fusarium* spp. mycotoxin contamination methods used by Agroscope and IHAR in Poland and Switzerland both for wheat and maize

Date of submission

28.11.2008



Dr. Maurizio Sattin
IA3 activity leader

Approved



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. elisa.scanzi@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: Nora Levay

Professional status: *(PhD student, post-doc, junior or senior scientist)* PhD student

Sending partner: Szent Istvan University

Institute/Department/Research Unit: Plant Protection Institute

Address: *(street, postal code, city)* 2103, Godollo, Pater K. u. 1. Hungary

E-mail and phone number of the researcher: Nora.Levay@mkk.szie.hu
0036 20 241 6464

Supervisor name*: Dr. Jörn Strassemeier

Supervisor e-mail*: joern.strassemeier@jki.bund.de

Supervisor phone number*:

*Supervisor information only for PhD student, post-doc and junior researchers

2. Information about hosting partner



Hosting partner: Julius Kühn Institut

Institute/Department/Research Unit: Julius Kühn Institut – Institute for Strategies and Technology Assessment in Plant Protection

Address: Germany, 14532-Kleinmachnow, Stahnsdorfer Damm 81.

Supervisor name*: Dr. Jörn Strasse Meyer

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

Supervisor phone number*: 0049 3320348366

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: (number of weeks or months) 2,5 months

Starting date: 20th February, 2008

(mobility started 20 days later in contrast to the originally planned period due to an unexpected hospital stay and health problems)

Ending date: 3rd May, 2008

4. Description of the activities and outcomes

Background and context: maximum 10 lines

Objective: working out the concept of a risk assessment model that has the potential to quantify the hazards of cropping strategies on biological diversity. Thus the tool, which is being developed, should be able to compare different crop protection strategies in terms of their potential impact on biodiversity. The model is fed with data on pesticide application strategies.

Activities carried out: literature survey among agricultural biodiversity studies was carried out. As a result of the mobility stay, the concept of the risk assessment model has been developed. This work was introduced among sub-activity participants at the joint workshop of RA3.3 and RA3.4 held in Zürich, Switzerland in May, 2008.

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

This mobility stay has been integrated within the RA3.3 activity, namely environmental risk and benefit assessment. The overall objective of this activity is to compare existing cropping strategies and to carry out ex ante assessment of upcoming cropping techniques. The challenge of this activity is to handle the complexity of agricultural environment and the diversity of different cropping systems across Europe. Available models reflect the wide range of conditions typical in Europe. If the target is to conduct an environmental risk assessment at a pan-European scale, we face both biological and mathematical problems, thus, the simultaneous use of different tools may result in reliable evaluation, since all models focus on various aspects of the complex agri-environmental system. My work is a step in this process. A new module for this complex evaluation is being under development, hopefully resulting in a risk assessment model in the near future. This work has been initiated within the frames of ENDURE.

6. Impact

Added value for the researcher: *There was an opportunity to study the SYNOPS model (developed at JKI) and to learn about landscape level modelling of pesticide drift hazards.*

Added value for sending partner and hosting partner: *Different approaches are reflected in the model concept due to the fact that the research fellow and the hosting supervisor added up their different experiences from regions with different biotic, abiotic and economic conditions.*

Date of submission



Dr. Maurizio Sattin
IA3 activity leader

Approved



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. elisa.scanzi@ibaf.cnr.it – within 15 days after the end of the visit)

Topic of the visit
Weed species and weed management

1. Information about researcher and sending partner

Name and surname: Zita Dorner

Professional status: Senior scientist

Sending partner: Szent Istvan University, Hungary

Institute/Department/Research Unit: Plant Protection Institute

Address: 1, Pater K. Street, Godollo, Hungary, 2103

E-mail and phone number of the researcher:

Dorner.Zita@mkk.szie.hu

+36-28-522-000/1778

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: Scuola Superiore Sant'Anna

Institute/Department/Research Unit:

Address: 33, Piazza Martiri della Libertà, Pisa, Italy, 56127

Supervisor name*: Prof. Paolo Bárberi

Supervisor e-mail*: barberi@sssup.it

Supervisor phone number*: +39-050-883.525

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: one month

Starting date: 13 May 2008

Ending date: 7 June 2008

4. Description of the activities and outcomes

Background and context: I am interested in weed species of Italy, weed management and methods of weed surveying. The hosting institute (SSSUP) runs experiments, where I could take part in weed surveying. Their sampling methods and sampling frames are different from ours. In Hungary the weed survey is carried out with the Balazs – Ujvarosi method (similar to Braun-Blanquet scale) for estimating weed cover.

Objective: I would like to study experiments of the hosting institute and also their sampling methods on crop fields in winter wheat, maize and tomato. I would like to get some useful information about their weed management strategy the most dangerous weed species on fields and about the *Cyperus esculentus* which is a new weed species in Hungary.

Activities carried out: I carried out weed surveys and weed count in winter wheat, maize and tomato. Both in wheat and tomato sampling plots of 25 x 30 cm, in maize 16 sampling plots of 50 x 50 cm were identified. During the surveys I recorded weed species and their phenological stage.

5. Links between visit activity and ENDURE

I am member of the ENDURE RA 4.5 Working Group “Weed biology and management”. The aim of this group is to develop Weed Traits Database (WTDB) which will contain information about weed traits and parameters (life-history, eco-physiological traits) for the species most important to European agriculture.

Data are entered by volunteer weed scientist from the RA 4.5 team. I have chosen five weed species (*Ambrosia artemisiifolia*, *Datura stramonium*, *Echinochloa crus galli*, *Papaver rhoeas*, *Tripleurospermum inodorum*).

In the university of Pisa I could collect some useful scientific articles about weeds from peer reviewed journals. They provided information about weed traits and parameters, later these data were entered into WTDB.

6. Impact

Added value for the researcher:

I have got some new information about:

- the most dangerous weed species of Italy,
- *Cyperus esculentus* (new weed species in Hungary)
- the weed survey methods,
- mechanical weed control,
- agrobiodiversity.

Added value for sending partner and hosting partner:

In experimental areas (in tomato and in maize) I carried out weed surveys. I have recorded the weed species and their density. I could compare the conventional and the ecological system.

Date of submission

14 October 2008



Dr. Maurizio Sattin
IA3 activity leader

Approved



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. elisa.scanzi@ibaf.cnr.it – within 15 days after the end of the visit)

1. Information about researcher and sending partner

Name and surname: *Silke Dachbrodt-Saaydeh*

Professional status: *M.Sc.*

Sending partner: *JKI*

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

Address: *Stahnsdorfer Damm 81, D - 14532 Kleinmachnow, Germany*

E-mail and phone number of the researcher: *silke.dachbrodt-saaydeh@jki.bund.de; +49 33203 48303*

Supervisor name*: *Dr. Bernd Hommel*

Supervisor e-mail*: *bernd.hommel@jki.bund.de*

Supervisor phone number*: *+49 33203 48312*

* Supervisor information only for PhD student, post-doc and junior researchers

2. Information about hosting partner

Hosting partner: *Rothamsted Research*

Institute/Department/Research Unit: *Information and Liaison*



Address: Harpenden, Herts AL5 2JQ, UK

Supervisor name*: Dr. Susannah Bolton

Supervisor e-mail*: susannah.bolton@bbsrc.ac.uk

Supervisor phone number*: +44 1582 763133 ext.2757

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: 2 weeks

Start date: June 9th, 2008

End date: June 20th, 2008

4. Topic of the visit

A study exploring the management of information within the Organisation and the transfer of knowledge to different stakeholders outside the Organisation

- *Status quo analyses of information transfer regarding scientific knowledge for the reduction of pesticide use in the UK*
- *Exploring the communication of science and scientific knowledge to the different stakeholder group in UK society*

5. Links between visit activity and priority areas

- *This study provided additional information about the knowledge transfer from science to field (linked with SA1), the communication of science (IA4) and explored the role science can play for informing different stakeholders (SA4, e.g. advisors and policy makers).*
- *Study of approaches and experiences in the management and communication of crop protection issues and promotion of the implementation of knowledge management (IA4).*

Date of submission

10.07.2008

Accomplishment:

Knowledge transfer from science to field and the communication of science

This mobility activity consisted of the participation at the 2 days Cereals 2008, the leading technical event for the arable industry in the UK, desk study work and a visit to Brooms Barn Applied Crop Sciences.

At the Cereals 2008 event Rothamsted Research was represented with an exhibition site displaying different research activities and researchers communicating with the visitors. The event offered a perfect opportunity to conduct interviews with the different bodies and organizations engaged in

extension and for analyses of the knowledge transfer. Therefore interviews with key persons of advisory services, research institutes, levy bodies and private consultants were conducted.

General findings

The UK system of advisory system is very diverse. Levy bodies such as the British Beet Research Organisation (BBRO) play a very important role in advising farmers and adapting and transferring crop specific scientific information to farmers. Private organisations constitute a very big part of the advisory services for farmers and state extension services are basically non-existent.

R&D transfer from science to extension

The interviewed key persons represent the human interface between science and farming for their institutions. The contact to all relevant scientific information is very intense and based on a great personal experience. Their awareness of scientific development and new research results pertinent for the implementation in practice is based on a very deep understanding of science. In all types of organisations research trials are carried out to a certain extent mostly driven by the need for new solutions or identified potentials of new strategies for the farming sector. In many cases such applied research is conducted in cooperation with the industry. This constitutes an additional knowledge and funding source.

The RRA (Rothamsted Research Association)¹ seeks to forge and sustain beneficial links between scientists and those involved in the diverse practices of agricultural businesses. It provides privileged access to the latest developments in agricultural research, direct contact with scientists, interactive workshops and technical demonstrations on targeted research topics. All advisory organisations are members of RRA either on personal member ships or as institutions.

Another type of knowledge development and transfer are LINK Projects² which are collaborative projects of research, extension and industry. Such projects are initiated by DEFRA and funded by the government and the industry.

Knowledge transfer form extension to the field

The research and trials results from the advisory system constitute the base for the knowledge transfer to farmers. The scientific knowledge is not transmitted directly to the farmer and a great deal of intermediate adaptation and field trials are carried out. The knowledge is transmitted by group activities and participatory forms such as winter meetings, workshops, open and field days, etc. Advisory services such as TAG (The arable group)³ and AICC (Association of Independent Crop Consultants)⁴ see their foremost role in advisory services for farmers according to their requests and needs to optimize production and maximize yields. Holistic approaches such as IPM are not explicitly covered by TAG; it is incorporated by AICC in their advice to farmers.

¹ <http://www.rothra.org/index.php>

² <http://defrafarmingandfoodscience.csl.gov.uk/linkprogrammeoverview.cfm>

³ <http://thearablegroup.com/>

⁴ <http://www.aicc.org.uk/newsite/introduction.asp>

Velcourt⁵ is an enterprise for farm management implements advanced farming approaches ensuring best strategies for their farm managers. The strategies are developed and validated in trials ensuring application of best methods. The farm managers work as advisors as well passing the information and experiences on to farmers. Yearly feed back sessions are held to update on the results. The Velcourt research unit is having yearly speed dating sessions with scientists from RRES to update on new developments.

RRA aims to ensure that new scientific knowledge of relevance to agricultural management practices is rapidly transferred in a usable form. Members, including farmers, land-owners, consultants, advisors, industry representatives and policy makers can access a wide range of information and participate in workshops and seminars organised with scientists. Additionally they receive the RRA newsletter on latest scientific developments in a comprehensive form.

Conclusion

This study revealed that there is an increasing gap of transforming the scientific knowledge into applied knowledge for farmers. This development is due to increasing detachment of research from applied science and the decreasing human resources. This should be borne in mind for future decisions on interfaces of knowledge transfer. The privatisation of several organisations such as ADAS increased the lack of resources. The collaboration of research and industry or business enterprises in LINK Projects is able to deliver a very valuable contribution the transfer of knowledge and the adaptation of the knowledge for the farmers. The contributions of organisations like Brooms Barn which comprise a very suitable combination of research and applied science in farming is very efficient and are able to transmit an overall view and more than practical information on the optimisation of farming.

The question which impacts and benefits science is generating for the farming sector and the society in general should be investigated as well as the role science plays in the knowledge transfer chain.



Dr. Maurizio Sattin
IA3 activity leader

Approved



European Network for the durable exploitation of crop protection strategies

IA3 Activity: Human resource exchange

ENDURE - Internal Mobility

Final activity report

(This form has to be completed and sent to the activity leader – the message should be sent to his p.a. elisa.scanzi@ibaf.cnr.it – within 15 days of the end of the visit)

Topic of the visit

The aim of my visit to Denmark is to improve my knowledge about physical weed control strategies and machines (with particular attention to innovative tools for in-row weed control) and band steaming strategies.

1. Information about researcher and sending partner

Name and surname:

Marco Fontanelli

Professional status: *(PhD student, post-doc, junior or senior scientist)*

PhD student

Sending partner:

Scuola Superiore Sant'Anna, Pisa; University of Pisa (Italy)

Institute/Department/Research Unit:

Land Lab and CIRAA

Address: *(street, postal code, city)*

Piazza Martiri della Libertà 33, Pisa, 56127; Via del Borghetto 80, Pisa, 56124

E-mail and phone number of the researcher:

mfontanelli@agr.unipi.it; +39 0502218922

Supervisor name*:

Prof. Andrea Peruzzi

Supervisor e-mail*:

aperuzzi@agr.unipi.it

Supervisor phone number*:

+39 0502218942

*Supervisor information only for PhD student, post-doc and junior researchers

2. Information about hosting partner

Hosting partner:

University of Aarhus Faculty of Agricultural Sciences (Denmark)

Institute/Department/Research Unit:

DJF Research Centre Flakkebjerg, Department of Integrated Pest Management

Address: (*street, postal code, city*)

Forsøgsvej 1, Slagelse, DK-4200

Supervisor name*:

Senior Scientist Bo Melander

Supervisor e-mail*:

Bo.Melander@agrsci.dk

Supervisor phone number*:

+45 8999 1900

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration:

3 months

Start date:

16th May 2008

End date:

21st August 2008

4. Description of the activities and outcomes

Background and context:

Three years of experience on non-chemical weed management machinery (for integrated and organic vegetable crops) and innovative soil steaming systems.

Objective:

The aim of my visit to Denmark was to improve my knowledge about physical weed control strategies and machines (with particular attention to innovative tools for in-row weed control) and band steaming strategies.

Improve my data processing capacity and scientific knowledge for international manuscript writing.

Edit a proof of a manuscript for an international scientific paper.

Activities carried out:

-Improving my knowledge about physical weed control (instructive visits in accordance with my supervisor):

1. Visit to a Danish organic (Slagelse, DK) carrot grower carrying out band-steaming treatments with an on purpose made steaming machine drawn by a GPS driven tractor;
2. Danish organic tour. Physical weed control machines for vegetable crops.
3. Visit to the DJF Department of Agricultural Engineering (Horsens, DK) for open-field trials on "hortibot" (hi-tech innovative machine for row-detection);
4. Visit life Faculty (Copenhagen, DK) for open-field trials on flame weeding;
5. Visit life Faculty (Copenhagen, DK) for open-field trials on autonomous tractor developed for crop protection interventions.
6. Visit SLU Faculty (Alnarp, Sweden). Hot water and physical weed control machines.

-Improving my scientific knowledge:

1. ANOVA and dose-response analysis for soil steaming weeding effect evaluation;

2. Scientific manuscript review on soil steaming;
3. Experimental open-field work at DJF Flakkebjerg Centre (wheat, potato and fava bean harvest);
4. Digital image analysis for weed canopy percentage evaluation.

5. Links between visit activity and ENDURE

My visit was related to the following ENDURE activities:

- RA1 optimizing and reducing pesticide use based on existing approaches;
 - RA1.1 Identification, configuration and evaluation of promising approaches;
- RA2 designing innovative crop protection strategies;
 - RA2.2 Exploitation of innovative technologies for implementing crop protection strategies.

6. Impact

Added value for the researcher:

Added knowledge about machines for physical weed control, data analysis, image analysis, data presentation and plotting for scientific papers.

Added value for sending partner and hosting partner:

Sending partner added value consists on the researcher knowledge acquisition and the possibility of submitting a new scientific paper.

Hosting partner added value consists on the possibility to improve its knowledge about the Italian research on physical weed control and soil steaming.

Date of submission

04/09/2008



Dr. Maurizio Sattin
IA3 activity leader

Approved



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. elisa.scanzi@ibaf.cnr.it – within 15 days after the end of the visit)

Topic of the visit

Conducting a survey on farm level in Denmark, United Kingdom, The Netherlands and Germany, in order to make more precise and detailed economic description and analysis of different cropping systems and their respective crop protection methods, which are classified according with two dimensions of pesticide use: intensity (high and low) and innovation (high and low).

1. Information about researcher and sending partner

Name and surname: Hernández, José

Professional status: *PhD Student*

Sending partner: Agroscope Reckenholz-Tänikon Research Station ART

Institute/Department/Research Unit: Agricultural Economics and Engineering / Socioeconomics

Address: *Tänikon, CH – 8356 Ettenhausen, TG*

E-mail and phone number of the researcher: 0041(0)523683131

Supervisor name*: Gabriele Mack

Supervisor e-mail*: gabriele.mack@art.admin.ch

Supervisor phone number*: 0041(0)523683215

*Supervisor information only for PhD student, post-doc and junior researchers

2. Information about hosting partner

Hosting partner: 1. Humboldt University of Berlin
2. Julius Kühn-Institut

Institute/Department/Research Unit:

1. Division of Resource Economics of the Department of Agricultural Economics and Social Sciences at the Faculty of Agriculture and Horticulture
2. Institute for Technology Assessment in Plant Protection

Address: 1. Philippstr. 13, Haus 12, Raum 1.07, 10099, Berlin
2. Stahnsdorfer Damm 81, 14532, Kleinmachnow

Supervisor name*: 1. Prof. Dr. Dr. h. c. Konrad Hagedorn
2. Dr. sc. Nat. Volkmar Gutsche

Supervisor e-mail*: 1. k.hagedorn@agrar.hu-berlin.de
2. v.gutsche@bba.de

Supervisor phone number*: 1. 0049(0)3020936305
2. 0049(33293)48424

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: *(number of weeks or months)* 2,5 weeks

Starting date: 26.05.2008

Ending date: 11.06.2008

4. Description of the activities and outcomes

Background and context: *maximum 10 lines*

1. Discussion of the state-of-art of the research project is an instrument to improve the methods applied and to ensure the quality of the scientific work.

2. The availability of statistical data containing actual quantities of pesticides applied in crop production is limited; normally statistics are based on sold quantities and are dissimilar in coverage among countries. Therefore, and with the aim of making policy recommendations the collection of more precise data at regional level is mandatory.

Objective: *maximum 10 lines*

1. To get supervision from the doctoral committee of the division of Resource Economics. To attend sessions of the Research Colloquium organized at the division of Resource Economics.

2. To obtain a first draft of a questionnaire that will be employed to collect data on pesticide use during the second phase of ENDURE. To improve the quality of the questionnaire through the scientific advice of experts on pesticide use evaluation.

Activities carried out: *maximum 20 lines*

1. Discussion with the Professor Hagedorn about the research project and the doctoral thesis. He recommended to apply the “Institutional Framework and Development Analysis” theory to improve the definition of the analytical framework and consequently ensure that answers with scientific valuable quality to the research questions will be obtained through application of the appropriate methodology. Preliminary talks with Dr. Volkmar Beckmann, who is a scientific member of the Division of Resource Economics, about his participation as co-advisor for the doctoral thesis. Participation in two sessions of the Research Colloquium (“Reasons for bioenergy engagements: preliminary reading of qualitative interviews with regional actors” by Melf-Hinrich Ehlers und „Fostering bio-innovation in Asia: knowledge gaps and challenges“ by Dr. Rajeswari Raina), where methods and quality of these projects was discussed.

2. A first draft of a questionnaire to be applied at farm level on a written survey on pesticide use was developed. For the formulation of the questions and use of formats that are familiar for farmers Dr. Dietmar Rossberg, who is the Leader of the Program “Neptun” (network for evaluation of the use of pesticides in different natural areas of Germany) had given useful inputs and made valuable suggestions. Through Dr. Volkmar Gutsche the contact with the foundation that promote the fruit growing of fruit growing in the region of the Lake Constanze (Kompetenzzentrum Obstbau – Bodensee) has been established towards accomplishment of a survey during the second phase of ENDURE.

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

1. With the scientific work produced to fulfil the tasks proposed for the Research Activity 3.2: Analysis of economic driving forces in crop protection, a doctoral thesis will be written, to ensure the scientific quality of that works also implies that the deliverables elaborated for ENDURE have scientific acceptance.

2. The elaboration of an appropriate tool to collect information about use of pesticides is important to fulfil the activities proposed within the Research Activity 3.2 during the second phase of ENDURE. Similarly, for the proposed task that will be completed during the second phase of ENDURE, the cooperation of partners, in this case JKI, is fundamental.

6. Impact

Added value for the researcher: *maximum 10 lines*

1. As a researcher, it is important to get inputs to improve the quality of the work and to ensure that the doctoral thesis is written with scientifically accepted standards.

2. A know-how in the elaboration of questionnaires and evaluation of use of pesticides was acquired.

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

1. The production of scientific work is complemented.
2. Closely relations among institutions has been taken and planning about procedures to complete tasks during the second phase of ENDURE have been overtaken, which will help not only to complete the proposed activities, but also to ensure their quality.

Date of submission

17.06.2008



Dr. Maurizio Sattin
IA3 activity leader

Approved



European Network for the durable exploitation of crop protection strategies

IA3 Activity: Human resource exchange

ENDURE – PhD Scholarship

Final activity report

(The form has to be filled in and sent to the activity leader – message should be sent to his p.a. elisa.scanzi@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: Małgorzata Lisowska

Professional status: PhD student

Sending partner:

**Institute/Department/Research Unit:
Plant Breeding and Acclimatization Institute/ Department of Plant Pathology/
Laboratory of quarantine diseases.
Address: Radzików, 05-870 Błonie.**

E-mail and phone number of the researcher: m.lisowska@ihar.edu.pl

Supervisor name*: Edward Arseniuk

Supervisor e-mail*: e.arseniuk@ihar.edu.pl

Supervisor phone number*: (+48 22) 725 30 95

*Supervisor information only for PhD student, post-doc and junior researchers

2. Information about hosting partner

**Hosting partner:
Plant Research International/**

Institute/Department/Research Unit: Biointeractions and Plant Health

Address: Droevendaalsesteeg 1, 6708 PB Wageningen The Netherlands

Supervisor name*: Jan van der Wolf

Supervisor e-mail*: Jan.vanderwolf@wur.nl

Supervisor phone number*: +31 317 47 60 24

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: 3 months

Starting date: 31Th of September

Ending date: 30Th of November

4. Description of the activities and outcomes

Background and context: *maximum 10 lines*

The research of the business unit Biointeractions and Plant Health focuses on the analysis and exploitation of plant/pathogen interactions, symbiotic and other microbiological interactions. They develop new strategies and technologies for integrated crop protection, plant health management and ensuring food safety. Team of dr Jan van der Wolff is focused on testing, detection and identification of plant pathogens. Identification and use of active organic substances and micro-organisms, genome analyses for the identification of virulent genes of plant pathogens, epidemiological and population dynamic input for decision support systems, and integrated control strategies of pest and diseases.

Objective: *maximum 10 lines*

The project aims to develop technique which is able to distinguish viable from non-viable cells based on the use of propodium monoazide (PMA). PMA only enters bacterial cells when cell membrane is permeabilized (such as with dead bacterial cells), where it intercalates DNA. The molecule can be cross-linked by exposure to light. Crosslinked PMA-genomic DNA complexes are removed during standard DNA extraction, whereas the DNA purified from living cells is not affected by PMA presence. This technique has been developed to detect two very important potato pathogens. Gram-positive quarantine phytopathogenic bacterium *Clavibacter michiganensis* subsp. *sepedonicus* (Cms), and *Dickeya* gram-negative pathogenic bacterium responsible for blackleg in potato.

Activities carried out:

maximum 20 lines

Investigation carried out in PRI laboratory was focused on:

- preparation of medium TSA, PCV, YGM.
- optimisation PMA treatment (different concentration of PMA, different exposure time, different concentration of bacteria cells).
- set up of PCR reaction with primers PSA1 PSAR-for *Clavibacter michiganensis* subsp. *sepedonicus*.
- set up of PCR reaction with primers ADE1 ADE2-for *Dickeya*.
- use different kind of antibiotics to estimate the best way of permeabilized cell membrane for *Dickeya*.
- genetic transformation of the plant pathogen such as : *Xanthomonas* spp, *Dickeya* by electroporation using GFP.
- Staining viable and non-viable cells of *Clavibacter michiganensis* subsp. *sepedonicus*. *Dickeya*. Using SYTO9 in combination with PMA for fluorescence microscopy.
- set up of SEQAM reaction and sequencing for *Xanthomonas* species.
- set up of Real-Time PCR for *Xanthomonas* spp.

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

My research activities in ENDURE network (seed born diseases) is strictly connected with project which has been realized during my stay in Bionteraction and Plant Health Laboratory in PRI

The differentiation between live and dead bacterial cells presents an important challenge in many microbiological applications. Due to the persistence of DNA in the environment after cells have lost viability DNA-based detection methods cannot differentiate whether positive signals originate from live or dead bacterial targets. Propidium monoazide (PMA) is highly selective in penetrating only into dead bacterial cells with compromised membrane integrity but not into live cells with intact cell membrane cell walls. Once inside the cells PMA intercalates into the DNA and can be covalently cross linked to it which strongly inhibits PCR amplification. PMA was used to differentiate viable from nonviable cells for two very important potato pathogens Gram positive *Cms* and Gram negative *Dickeya*, which both are spread by potato seeds. To evaluate seed testing it is necessary to use very sensitive PMA treatment which exclusively detect viable cells allows to avoid “false-positive” results.

6. Impact

Added value for the researcher: *maximum 10 lines*

The main advantage of 3 month scholarship in Wageningen was learning and understanding of use of molecular techniques such as PCR, SEQAM, Real Time PCR genetic transformation of bacterial species. My stay in PRI allows me to develop my knowledge and I had very big opportunity to use my knowledge in practise. Work with PMA and used it for live and dead distinction have generated very powerful tool for detection of plant pathogen. I have the honour to work with very friendly peoples who help me to understanding many new techniques which I will be able to use in my PhD project.

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

For sending partner: Training PhD student with new technique for detection and identification important bacteria which are causative agents of potato diseases.

For hosting partner: Develop a PMA treatment able to distinguish viable non-viable cells for two important bacterial potato diseases caused blackleg and ring rot in potato tubers. Receiving *Xanthomonas* species which will be use in microbial ecology research.

Date of submission

2008-12-14



Dr. Maurizio Sattin
IA3 activity leader

Approved



European Network for the durable exploitation of crop protection strategies

IA3 Activity: Human resource exchange

ENDURE - Internal Mobility

Final activity report

(This form has to be completed and sent to the activity leader – the message should be sent to his p.a. elisa.scanzi@ibaf.cnr.it – within 15 days of the end of the visit)

Topic of the visit

Comparison of different diagnostic methods for herbicide resistance

1. Information about researcher and sending partner

Name and surname: Solvejg Kopp Mathiassen

Professional status: Senior Scientist

Sending partner: Aarhus University , Faculty of Agricultural Sciences (Partner 6)

Institute/Department/Research Unit: Dept. of Integrated Pest Management

Address: Forsøgsvej 1, Flakkebjerg, DK-4200 Slagelse, Denmark

E-mail and phone number of the researcher: Solvejg.Mathiassen@agrsci.dk, +45 89993500 or +4589993581 (direct)

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: Rothamsted Research (RRES) (Partner 3)

Institute/Department/Research Unit: Pest Invertebrate Ecology

Address: Harpenden, Herts AL5 2 JQ, United Kingdom



Supervisor name*: Stephen Moss

Supervisor e-mail*: Stephen.Moss@bbsrc.ac.uk

Supervisor phone number*: +44 (1582)763133 extension 2521

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: 2.5 month (10 weeks)

Start date: 1. period: 09.09.2008 2. period: 30.10.2008

End date: 1. period: 11.10.2008 2. period: 06.12.2008

4. Description of the activities and outcomes

Background and context: *Herbicide resistance is a widespread problem in several European countries and the problem will probably increase due to the lack of herbicides with new modes of action. A wider use of diagnostic methods can prevent unnecessary use of herbicides with no effect due to herbicide resistance. However the choice of method should be balanced against the demand for accuracy and the time and cost consumption of the test. Pot and container experiments take 10 weeks and are quite expensive and laborious while Rothamsted Rapid Resistance Test is a relatively fast and inexpensive screening test. HWR test kit was developed to predict the efficacy of Atlantis and Hussar on *Poa annua*, *L. perenne* and *A. spica-venti* 7 days after treatment. During the visit new applications for detecting ALS resistance in *A. myosuroides* were identified.*

Objective: *To compare different diagnostic methods for herbicide resistance*

Activities carried out: *maximum 20 lines*

*Four different methods for resistance test were compared using 10 Danish and 6 British biotypes of *Alopecurus myosuroides*:*

1) Rothamsted Rapid Resistance Test was conducted twice. The first experiment included 16 biotypes, 5 herbicides and one dose. In the second experiment the test was repeated with one herbicide and two doses.

2) An outdoor container experiment including 10 biotypes was carried out with one dose of pendimethalin.

*3) A pot experiment was conducted with 5 herbicides and 16 biotypes of *A. myosuroides**

*4) HWR Test kit was demonstrated and validated on 2 biotypes of *Lolium multiflorum* (susceptible and partly resistant) and a resistant biotype of *Lolium rigidum* after treatment with Atlantis. In addition the test kit was tested on susceptible and resistant biotypes of *A. myosuroides* a few weeks after application of Atlantis and the results were promising for predicting survival or death of the plants. Consequently the HWR test kit might have potential as a resistance diagnostic test in the UK.*

During the stay we visited two farmers having serious problems with resistant blackgrass and joined a farmers meeting. At these occasions the HWR test kit was presented and a short review of the Danish Pesticide Action Plan was given.

Finally we had a lot of discussions about the Danish Pesticide Action Plan, experimental layouts, statistics and herbicide resistance management strategies.

5. Links between visit activity and ENDURE

The visit addresses to Research activity 4.1: Pesticide resistance management.

6. Impact

Added value for the researcher: *maximum 10 lines*

*The visit has provided an increased knowledge of advantages and disadvantages of different methods used for resistance testing and an improved insight in herbicide resistance management strategies. A joint publication concerning methods for resistance testing will be prepared on basis of the experimental data that has been produced during the visit. The visit has also provided an opportunity to present the HWR test kit for British farmers who found it a valuable tool for detecting ALS-resistance in *A. myosuroides* at an early development stage. Consequently a potential for expanded applicability was identified. Besides, it has been a great experience to take part in 'life and research' at another research station.*

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

Both sending and hosting partner believe that this was a very successful initiative, and a substantial amount of results were achieved in the 10 weeks, as detailed above. Splitting the period into two shorter periods was advantageous as it enabled experiments that require longer time periods (e.g. glasshouse and outdoor containers) to be completed. Several possibilities for future collaboration between Rothamsted Research and Aarhus University were identified and consequently an application for the 3rd mobility plan has been prepared to allow a junior researcher from Rothamsted (Richard Hull) to visit Aarhus University in 2009.

Date of submission

10.12.2008



Dr. Maurizio Sattin
IA3 activity leader

Approved



European Network for the durable exploitation of crop protection strategies

IA3 Activity: Human resource exchange

ENDURE - Internal Mobility

Final activity report

(This form has to be completed and sent to the activity leader – the message should be sent to his p.a. elisa.scanzi@ibaf.cnr.it – within 15 days of the end of the visit)

Topic of the visit

The value of non-crop land on farms for conservation biological control

1. Information about researcher and sending partner

Name and surname: Dr Lisa Eggenschwiler

Professional status: *(PhD student, post-doc, junior or senior scientist)* Scientist

Sending partner: Agroscope Reckenholz-Tänikon ART (AGROS)

Institute/Department/Research Unit: Agricultural Landscapes & Biodiversity

Address: *(street, postal code, city)* Reckenholzstrasse 191, CH-8046 Zürich, Switzerland

E-mail and phone number of the researcher: lisa.eggenschwiler@art.admin.ch, phone: +41 44 377 74 13

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: Rothamsted Research (RRES)

Institute/Department/Research Unit: Plant & Invertebrate Ecology Department

Address: *(street, postal code, city)* Harpenden, Hertfordshire, AL5 2JQ, United Kingdom



Supervisor name*: Dr Judith Pell

Supervisor e-mail*: judith.pell@bbsrc.ac.uk

Supervisor phone number*: +44 1582 763 133 ext. 2447

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: (*number of weeks or months*) 10 weeks

Start date: 27th April 2008

End date: 5th July 2008

4. Description of the activities and outcomes

Background and context: *maximum 10 lines*

Aphids can cause considerable damage in cereal crops. The aim of a planned project at AGROS is to develop seed mixtures for flowering strips which are especially attractive to cereal aphid antagonists, and to study how to place these strips in arable landscapes in order to efficiently enhance the beneficial insects, therefore reduce the cereal aphids and as a consequence reduce pesticide input. In terms of functional biodiversity we have studied the influence of wildflower strips on soil texture and the abundance of the entomopathogenic soil fungus *Metarhizium anisopliae* so far. This year a first experiment on cereal aphid control with flowering strips has been done. In the near future we will examine more aspects of the value of ecological compensation areas on arable land such as flowering strips for functional biodiversity for conservation biological control.

Objective: *maximum 10 lines*

- To learn new and appropriate methodologies and techniques related to habitat management and functional biodiversity to plan and extend experiments related to sub-activity RA 2.3
- To study the value of non-crop land on farms for conservation biological control by sampling natural enemies on farms across the East of England that have contrasting crop and non-crop diversities
- To study the value of early developing, alternative host plants for aphids and their natural enemies
- Sampling and examining differently managed soils for entomopathogenic fungi
- Making contacts with other researchers for further collaboration

Activities carried out: *maximum 20 lines*

- Study of literature about functional biodiversity in arable land, about entomopathogenic fungi and the *Galleria* bait method, methods and sampling designs
- Visual and vortis sampling of aphids and their natural enemies (parasitoids, entomopathogenic fungi, predators) in stinging nettle patches on 14 farms in the East of England (field work)
- Visual and vortis sampling of aphids and their natural enemies in arable crops and semi-natural (= non-crop) habitats on 14 farms in the East of England (field work)

- Sampling of soil and examination of entomopathogenic soil fungi by using the *Galleria* bait method. Start of a long-term-experiment with soil of cereal plots, grassland plots and fallow land.
- Contribution to mesocosm experiment on the interaction between aphids, an aphid parasitoid and an entomopathogenic fungus; setting up and removing the experiment, assessing plants for dead aphids
- Contribution to PhD thesis about the invasive Harlequin ladybird (*Harmonia axyridis*); field work and discussions

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

With our planned study about the influence of specially designed flowering strips on cereal aphids and their natural enemies (see chapter “Background and Context”) we are contributing to sub-activity RA 2.3. During my stay at RRES I could improve my knowledge about conservation biological control, functional biodiversity and specifically about aphids and their natural enemies which will help planning our further experiments at AGROS. Moreover, I established some contacts with people at RRES which could be relevant for the sub-activity.

6. Impact

Added value for the researcher: *maximum 10 lines*

- Improved knowledge about conservation biological control, functional biodiversity, methods (e.g. insect sampling techniques, *Galleria* bait method), entomology (i.e. aphids, lacewings, hoverflies, ladybirds, parasitoid wasps)
- Improved knowledge about farming in the UK
- Making contacts with people at RRES
- Improvement of English skills

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

Both partners: Making contacts, possible further collaboration, exchange of knowledge, experience and ideas.

Sending partner: Benefit of everything I learned during the stay at RRES, as methods, sampling designs and experience.

Hosting partner: Help with work in the field, lab and office; my contribution to discussions, e.g. about methods, sampling designs, farming in Switzerland, our experiments.

Date of submission

16th July 2008



Dr. Maurizio Sattin
IA3 activity leader

Approved



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. elisa.scanzi@ibaf.cnr.it – within 15 days after the end of the visit)

Topic of the visit

Basic conditions and requirements for training and certification of farmers, advisors and distributors for using plant protection products in ENDURE partner states

1. Information about researcher and sending partner

Name and surname: *Astrid Günther*

Professional status: *M.Sc.*

Sending partner: *JKI*

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

Address: *Stahnsdorfer Damm 81, D - 14532 Kleinmachnow, Germany*

E-mail and phone number of the researcher: *astrid.guenther@jki.bund.de; +49 33203 48225*

Supervisor name*: *Dr. Bernd Hommel*

Supervisor e-mail*: *bernd.hommel@jki.bund.de*

Supervisor phone number*: *+49 33203 48312*

* Supervisor information only for PhD student, post-doc and junior researchers

2. Information about hosting partner

Hosting partner: *Szent Istvan University (SZIE)*

Institute/Department/Research Unit: *Plant Protection Institute*

Address: *Pater K. street 1, H - 2100 Gödöllő, Hungary*

Supervisor name*: *Prof. Dr. Jozsef Kiss*

Supervisor e-mail*: *Jozsef.Kiss@mkk.szie.hu*

Supervisor phone number*: *+36 28 522 000/1771*

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: 4 weeks

Start date: 10th April 2008

End date: 9th May 2008

4. Topic of the visit

To support the sub-activity SA1.1 “Training of pest managers, advisors and facilitators of farmer groups”:

1. Provide primary and additional information for identifying training needs and lacking knowledge about IPM in the ENDURE network.
2. Identify of training needs within the ENDURE network, exchange of information depending on the training practises and plant protection advisory systems in the various ENDURE member states;
3. Design of a training programme for plant protection advisors, to take place in June 2008 on the experimental site in Dahnsdorf, Germany (organised by JKI in cooperation with and under the supervision of SZIE);

5. Links between visit activity and priority areas

- This stay will provide main and additional information for identification of training needs and lack of knowledge about IPM in the ENDURE network. Furthermore different training practises in the member states should be compared;
- Supporting the sub-activity SA1.1 “Training of pest managers, advisors and facilitators of farmers groups”.

Date of submission

17.05.2008



Dr. Maurizio Sattin
IA3 activity leader

Approved

Progression:

- 1) Taking part in *ENDURE Exploratory training workshop* on April 28th and 29th in Budapest:

The main topic was to discuss and draw conclusions from the *Desk Study with analysis of existing different training programmes and proposal for their feasibility under ENDURE activities*. (Janice



Jiggings) and the incorporation of a participatory approach into the current advisory systems in the ENDURE member states.

The main findings or key points from the desk study discussed in the workshop were that there is no integration of IPM training at the European, national or subregional levels. There is no clear picture of what is offered by whom or who accesses which of the private advisory/extension services. Technical and management advising of crop-specific or pest-specific IPM often varies amongst the different countries.

The queries were at what levels is it useful to organize IPM training information and would it be useful to target training efforts by developing a map or an inventory of hot spots, for example.

Proactive initiatives already exist in the various countries. Examples include direct payment schemes for integrated production, such as the market recognition label *IP Suisse* in Switzerland, the COOP supermarket group in Great Britain which offers advisory information and an agric specialists` guide *Assured Produce Scheme* (vegetables and fruits) and *Farming with Future*, based on a crop protection agreement with the water and pesticide industries and farmer`s organizations that implement strong *maximal residual levels* and *crop-specific good agricultural practices*.

- 2) Interviews with farmers, agricultural advisors and facilitators participating in an FAO project about participatory training of farmers and advisors in all parts of Hungary.

Topics: the Hungarian advisory system and Hungarian experiences with the participatory training in comparison to common advisory practices in Hungary.

The official Hungarian plant protection advisory system consists of a national *Plant Protection Chamber* with about 4000 members who mainly work as advisors throughout Hungary. All plant protection advisors must hold a university M.Sc. degree in plant protection. There are sub-chambers of the national chamber with local advisors in each country.

All plant protection advisors who work for the Hungarian state must be members of the national plant protection chamber, but not all of them are governmental agricultural officers (first group). There are also advisors in the local plant protection chambers (second group) who have a contract with the state of Hungary. The most dominant group is comprised of independent advisors who are paid by the farmers (third group), although these expenses can partly be recalled by the farmers from the state of Hungary. The advisors in the first and second group only very rarely spend time on farmers` fields. The dominant group advising farmers on-farm are the independent advisors.

In addition to these plant protection advisors, companies that trade in plant protection products such as Raiffeisen, also have advisors who are also members of the national chamber and must therefore have a licence in order to advise. There are also advisors of the agrochemical industry, of course.

What are the main duties of the advisors?

In Hungary plant protection products are divided into three categories. The first category includes the most toxic plant protection products with the highest impact or danger for the environment. The second category includes plant protection products of medium toxicity and plant protection products of less toxicity comprise the third category.

The sale, purchase and use of the first category plant protection products is only allowed with an M. Sc. degree in plant protection but they are also available with the prescription of an advisor in the national chamber and can be sprayed by the farmer if he is authorized to buy and sell second category plant protection products. This adviser must however be present during the spraying of the

plant protection product. Unfortunately this seldomly works because the advisors do not have enough time to be present on the field whenever a plant protection product has to be sprayed. Even for the decision to spray a ppp in most cases there is even a lack of time to decide whether to spray or not on-site and the farmers have to come to advisor's office to receive their prescription after having described their phytosanitary problem.

Buying, spraying and selling second category plant protection products is allowed if a farmer has a minimum farm size of 80 ha and a licence by the national chamber for the application of second category plant protection products. A university degree for this category is not necessary. Plant protection products that belong to the first category include, for example, all herbicides used in winter wheat and most of the insecticides. Most ppps used in orchards or viticulture belong to the second category.

Participation in retraining every five years is mandatory in order to keep a license for the first or second category. Training for the first category ppp licence takes 40 hours and is offered by the universities. Training for the second category takes only 8 hours and is organized by the plant protection chambers. Other official trainings don't exist, but trainings and workshops are also offered by various trade organizations, secondary agricultural schools, universities or the agrochemical companies especially during the winter (so-called winter schools).

A highly frequent early plant protection warning service by fax or e-mail, such as in Germany's federal states does not exist in Hungary and there is also a lack of knowledge about IPM methods and thresholds for pests and diseases that are specific to Hungary. The participatory training methods within the FAO project for farmer field schools in Hungary were a chance for the Hungarian farmers to get in contact with IPM.

The experiences of the facilitators, who are mostly advisors as well, and the farmers with participatory training and farmer field schools during the entire vegetation period were continuously positive. The advantages of FFS and participatory training methods in comparison to winter schools or "normal" advising are that knowledge is offered to the farmers and not just pure information and that it seems to be more efficient and ultimately less time-intensive to train farmers to be able to take their own decisions and not to be permanently dependent on continuous advising services.

3) Introduction to the process of participatory training at SZIE

What characterizes participatory training?

Training of Trainers and *Farmer Field School* are two core activities of IPM training. The knowledge gained in FFS will enable farmers to organize *Farmer Field Schools* for more farmers in their area.

FFSs are based on ecological principals, participatory training and non-formal educational methods. They emphasize learning through experience and dealing with real field problems. Training implies the facilitation of the learning process rather than instruction. FFSs give farmers the opportunity to experiment, sharpen their observation skills and take the initiative. Generalized recommendations need to be tested and adapted by the farmers themselves, according to the specific local conditions and skills that the farmers have gained through years of experience. A FFS is field-based and lasts for one cropping season (from seeding to harvest).



European Network for the durable exploitation of crop protection strategies

IA3 Activity: Human resource exchange

ENDURE - Internal Mobility

Final activity report

Topic of the visit

Literature review on weed biology and management and analyses of a plant traits database under development within Endure RA 4.5.

1. Information about researcher and sending partner

Name and surname: Ivan Sartorato

Professional status: Scientist

Sending partner: CNR

Institute/Department/Research Unit: Institute for Agro environmental and Forest Biology (IBAF)

Address: Viale dell'Università 16, 35020 Legnaro (PD)

E-mail and phone number of the researcher: ivan.sartorato@ibaf.cnr.it
Tel. +39 049 8272821

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: RRES

Institute/Department/Research Unit: Plant and Invertebrate Ecology Dept. (PIE)



Address: Rothamsted Research, Harpenden, Hertfordshire, AL5 2JQ Herts England

Supervisor name*: Jonathan Storkey

Supervisor e-mail*: jonathan.storkey@bbsrc.ac.uk

Supervisor phone number*: +44 01582 763133 extn 2550

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: 7 weeks (with an interval of one week in between, from 23/03/08 to 29/03/08)

Start date: 03/03/2008

End date: 30/04/2008

4. Description of the activities and outcomes

Background and context:

The stay was organised as part of the Endure RA 4.5 on weed biology and management and stemmed from previous contacts and cooperation with Jonathan Storkey within a working group on weed-crop competition of the European Weed Research Society.

Objective:

In addition to the Endure activity other objectives of the stay were to re-establish the former collaboration, to reanalyse previous common datasets of weed-crop competition and to compare recent approaches on plant traits for the definition of functional groups of weeds.

Activities carried out:

The main activity carried out during the stay has been a thorough literature search on two weed species, *Abutilon theophrasti* and *Chenopodium album*, aiming to characterise the ecophysiology and competitive behaviour of the two species. Part of the information retrieved from both electronic and paper archives available at RRES have been used as input for the Weed Trait database under development within the Endure RA 4.5.

Part of the stay was also devoted to an exchange of information and direct interactions with Niels Evans, administrator of the virtual laboratory (IA 2), to which CNR is participating.

5. Links between visit activity and ENDURE

See above

6. Impact

Added value for the researcher:

Apart from the strictly focussed activity previously described and the various opportunity for fruitful discussions on the specific topic, the value of the experience relayed on the possibility to know and compare different approaches to research and different research structures.

also participating to field activity and discussing topics related to various RRES research projects. It should also be mentioned the possibility to for refresh and improve my English skills.

Added value for sending partner and hosting partner:

The personal relationships established and reinforced during the stay will reverberate at partner's level; future cooperation and collaborations, not only about weeds, will become easier and more fruitful thanks to the possible exploitation of complementary competences and field environments.

Date of submission

20/05/08



Dr. Maurizio Sattin
IA3 activity leader

Approved



European Network for the durable exploitation of crop protection strategies

IA3 Activity: Human resource exchange

ENDURE - Internal Mobility

Final activity report

(This form has to be completed and sent to the activity leader – the message should be sent to his p.a. elisa.scanzi@ibaf.cnr.it – within 15 days of the end of the visit)

Topic of the visit

Improvement of the efficiency of natural enemies of plant pests through characterization of foraging behaviour. Volatiles involved in long-range and short-range attractiveness towards insect parasitoids in a tritrophic contest

1. Information about researcher and sending partner

Name and surname: Laura Cristina Rosso

Professional status: Assegnista di ricerca

Sending partner: CONSIGLIO NAZIONALE DELLE RICERCHE (CNR).

Institute/Department/Research Unit: ISTITUTO PER LA PROTEZIONE DELLE PIANTE Sede di Bari. (IPP-CNR).

Address: Via Amendola 122/D, 70126, Bari, Italy.

E-mail and phone number of the researcher: l.rosso@ba.ipp.cnr.it , +39 080 5929 247

Supervisor name: Aurelio Ciancio

Supervisor e-mail: a.ciancio@ba.ipp.cnr.it

Supervisor phone number: +39 080 5929 221

2. Information about hosting partner

Hosting partner: ROTHAMSTED RESEARCH

Institute/Department/Research Unit: PLANT PATHOLOGY AND MICROBIOLOGY (PMPP).

Address: Harpenden, Hertfordshire AL5 2JQ, UK.

Supervisor name: Ian Clark

Supervisor e-mail: ian.clark@bbsrc.ac.uk

Supervisor phone number: Tel: + 44 (0) 1582 763 133

3. Information about the visit

Duration: 3 months (8 weeks funded by Endure)

Start date: 06/02/2008

End date: 07/05/2008

4. Description of the activities and outcomes

Background and context:

The fungus *Pochonia chlamydosporia* has potential as a biological control agent against root-knot nematodes (Kerry *et al.*, 1982; 1984). Root-knot nematodes are widespread and important pests in both annual and perennial crops worldwide. Control of these pests in perennial crops or in rotations with nematode susceptible crops is difficult as nematicides must be applied several times during a growing season, which is often not practicable or economic. There is, therefore, a need to develop alternative methods to control populations of root-knot nematodes. Specific isolates of *P. chlamydosporia* have shown potential against root-knot and significantly reduced populations (Morton *et al.*, 2003). These isolates were developed and tested in an integrated pest management system for the control of root-knot nematodes (De Leij and Kerry, 1991; De Leij *et al.*, 1992; Atkins *et al.*, 2003).

Objective:

Aim in this study was to develop an approach that could be used to simultaneously identify genes that are differentially regulated across a range of time-points during nematodes and *Pochonia* interaction

Activities carried out:

Development of molecular biology studies about the fungus and nematode interactions. Study of cDNA-AFLP techniques, performed using RNA sampled from a range of time-points throughout the infection events. Transcript derived fragments (TDFs) were screened to identify both up and down-regulated genes across the infection process, by running samples in adjacent tracks. Fragments showing differential expression patterns were excised from the gels and re-amplified by PCR. Amplified TDFs were sequenced and the most probably function assigned by homology to known sequences present in GenBank.

5. Links between visit activity and ENDURE

Development of molecular tools and technologies based on gathering DNA data and biochemical signals in the plant rhizosphere, to increase knowledge about the role of soil biological control agents, to reduce soil pesticides use in the integrated management of soil nematodes. Specific ENDURE activity(ies) and sub-activity(ies) involved: RA4.2, IA2.2

6. Impact

Added value for the researcher:

cDNA AFLP was a powerful technique for the isolation of genes that are important for establishing interactions between *P. chlamydosporia* and root-knot nematodes. This

knowledge of differentially regulated gene expression will help to elucidate the molecular mechanisms associated with physiological functions during the parasitism process.

Added value for sending partner and hosting partner:

The identification of specific genes will lead to a greater understanding of the molecular signalling leading to the establishment and maintenance of biological control agents in the host plant rhizosphere.

Date of submission

21/05/2008



Dr. Maurizio Sattin
IA3 activity leader

Approved