



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)

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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)

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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 softwares (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