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

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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 lay-outs, 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

endure
diversifying crop protection

Dr. Maurizio Sattin
IA3 activity leader

Approved