



**European Network for the durable exploitation of crop protection strategies**

**IA3 Activity: Human resource exchange**

**ENDURE - Internal Mobility**

***Final activity report***

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

**Topic of the visit**

Investigations on Fusarium head blight occurrence on wheat and triticale. Focus on the ecological and epidemiological link between precedent culture of maize and the occurrence of pathogenic Fusaria on wheat and triticale cultivars.

**1. Information about researcher and sending partner**

**Name and surname:** Fabio Mascher

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

**Sending partner:** AGROS (Agroscope Changins-Wädenswil research station ACW)

**Institute/Department/Research Unit:** Plant Breeding and Genetic Resources

**Address:** rte de Duillier, 1260 Nyon (Switzerland)

**E-mail and phone number of the researcher:** 0041 22 363 47 33

**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 Breeding and Acclimatization Institute IHAR Radzikow

**Institute/Department/Research Unit:** Department of Plant Breeding and Genetics,  
Laboratory of Applied Genetics

**Address:** IHAR Radzikow, PL 05-870 Blonie, Poland

**Supervisor name\*:** Dr. Jerzy Czembor

**Supervisor e-mail\*:** j.h.czembor@ihar.edu.pl

**Supervisor phone number\*:** 0048 22 725 42 19

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

### **3. Information about the visit**

**Starting date:** 10 April 2010

**Ending date:** 23 April 2010

**Total duration:** two weeks

### **4. Description of the activities and outcomes**

#### **Background and context:**

*Fusarium* head blight of can reduce yield potential of wheat and triticale and accumulate different types of mycotoxins (Fusariotoxins) in the kernels. The disease constitutes therefore a concern for food safety and necessitates an appropriate IPM strategy. The use of resistant varieties is recognised to be a key element for an efficient protection scheme.

Breeding for resistance needs information on the ability of the genotypes to avoid mycotoxin accumulation. However, only little is known yet on the interaction of mycotoxin producing *Fusarium* species and cereal genotypes. Moreover, new, cheap and reliable methods to measure mycotoxins in kernels are needed.

#### **Objective:**

The objectives of the visit were to exchange experiences regarding determination of *Fusarium* species on kernels and to discuss non-destructive methods to detect Fusariotoxins.

#### **Activities carried out:**

- Discussions and appraisal of data obtained in a common experiment dealing with the affinity of *Fusarium* species to resistant and susceptible wheat varieties. This experiment will be continued for a second year.
- Determination of *Fusarium* species. According to a standard protocol, *Fusarium* isolates have been isolated from wheat and maize kernels and cultivated. Species have been determined by colony coloration and spore and mycelium morphology.
- Discussion about a common project on the use of non-destructive methods (NIRS and SmartNose) for the detection and quantification of mycotoxin contamination in cereal and maize kernels.
- Presentation given on "Approaches to understanding kernel resistance in wheat" on Thursday 23 April 2010. Audience env. 50 people.
- Visit of Field trials at IHAR and in the surroundings of Wroclaw.

### **5. Links between visit activity and ENDURE**

This visit has been realised in the frame of the 4<sup>th</sup> ENDURE Joint Programme of Activity. In particular to

- IA2. Virtual laboratory in crop-pest control. Exchange of methods and appraisal of results obtained in a common research activity. Establishment of a common research protocol.
- EUROWHEAT. Results obtained herein will be made available on the internet platform EUROWHEAT, developed within ENDURE.
- RA4.2. Exploitation of plant genetic resistances. One of the major aims was to develop methods to improve the characterisation of different aspects of kernel resistance in wheat and triticale.

## **6. Impact**

### **Added value for the researcher:**

The clarification of the concept of kernel resistance and the establishment of a common procedure on determining Fusarium species on kernels is the cornerstone for a future collaboration. A project will be elaborated for the implementation of high-throughput methods for mycotoxin analyses.

The stay in Radzikow has also given the occasion to exchange with many researchers about other important and very actual diseases such as yellow and brown rust, Septoria leaf and ear blotch.

### **Added value for sending partner and hosting partner:**

The exchange of IHAR and AGROS has given the occasion to better understand the research approaches of both partners. Interactions are possible and will be developed to improve IPM strategies in yellow and brown rust, septorias and Fusarium head and ear blight (in maize). Therefore, both ENDURE partners take profit of this visit. A research activity has been discussed and will be continued for a second year. The development of new screening procedures, useful for variety tests and breeding will be subject of a bilateral research proposal.

### **Date of submission**

Nyon, 2<sup>nd</sup> May 2010



Dr. Maurizio Sattin  
IA3 activity leader

Approved