



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 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 disease in EUROPE which reduce grain yield and quality. Infection of this fungus is causing the contamination of grains with mycotoxins. This render 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, HPLC 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:

- 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 Aroscope 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 Aroscope 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 Aroscope and IHAR in Poland and Switzerland
- c. determination of *Fusarium* spp. mycotoxin contamination methods used by Aroscope and IHAR in Poland and Switzerland

Date of submission

14.12.2008



Dr. Maurizio Sattin
IA3 activity leader

Approved