



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 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 both in maize and wheat. The results of the preliminary experiments obtained in Polish Plant Breeding and

Acclimatization Institute and Agroscope 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*

1. Set up a map of *Fusarium* spp. species occurring on maize and wheat 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 of the impact of naturally occurring *Fusaria* spp. by symptom development and mycotoxin content 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*

- 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:

- a. monitoring of *Fusarium* spp. and epidemiology (specific and general surveillance of pest incidence)
- b. determination of *Fusarium* spp. mycotoxin contamination using ELISA and HPLC methods
- c. 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 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 both on wheat and maize
- 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 both for wheat and maize

Date of submission

28.11.2008



Dr. Maurizio Sattin
IA3 activity leader

Approved

