



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 – within 15 days after the end of the visit)

Topic of the visit

1. Information about researcher and sending partner

Name and surname: *Marleen Riemens*

Professional status: *junior scientist*

Sending partner: *WUR*

Institute/Department/Research Unit: *PRI/Agrosystems Research*

Address: *Droevendaalsesteeg 1, 6708 PB, Wageningen, NL*

E-mail and phone number of the researcher: marleen.riemens@wur.nl, +31317480499

Supervisor name*: *L.A.P. Lotz*

Supervisor e-mail*: *bert.lotz@wur.nl*

Supervisor phone number*: *+31317 480556*

*Supervisor information only for PhD student, post-doc and junior researchers

2. Information about hosting partner

Hosting partner: *Aarhus University, Faculty of Agricultural Sciences*

Institute/Department/Research Unit: *Department of Integrated Pest Management*

Address: Forsøgsvej 1, DK-4200 Slagelse

Supervisor name*: Niels Holst

Supervisor e-mail*: niels.holst@agrsci.dk

Supervisor phone number*: +45 89993591

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Starting date: 29-08-2009

Ending date: 01-11-2009

Total duration (number of weeks): 9

4. Description of the activities and outcomes

Background and context:

The topic of the visit was perennial weed growth. Perennial weeds are an increasing problem in today's agriculture. This is due to several factors, among which is a reduced herbicide availability. A good understanding of perennial growth is important to optimize management of these weeds. Weed population dynamic models can help us understand their growth.

Objective: *The objective of the activities was to: 1. start the construction of a model suitable for the simulation of perennial weeds. 2. collaborate in current projects on perennial weeds (e.g. field work), 3. learn about the UniSimulator modelling approach.*

Activities carried out:

1. *The construction of a model able to simulate perennial weed growth, competition and management was started. Based on data of both the sending and hosting partner and a literature search a perennial weed growth model was constructed. The model can describe the growth, reproduction and competition of a perennial weed within a season. The model is based on the model INTERCOM and was extended with belowground biomass partitioning to accommodate the perennial reproduction.*
2. *Joint field experiments on perennials for 2010 were designed to facilitate parameter estimations. An experimental design was constructed for field experiments that will be carried out at both the sending and hosting institution in 2010. The experiments are aimed at the parameterization of additional parameters of the model described under activity 1. Measurements will include emergence, Photosynthesis, biomass partitioning and other growth parameters such as SLA and LAI.*
3. *A training (e-course type) was followed on the WeedML modelling language and Universal Simulator approach. The WeedML language is a language that specifies how compiled building blocks (models, controller and outputs) are put together to be executed as one coherent model. The Universal Simulator software (www.weedml.org) is used to implement the loose coupling of the building blocks supplied as dynamic-link libraries.*

5. Links between visit activity and ENDURE

The visit is linked to RA4.5 Weed biology and management. This sub-activity has the objective of developing a database and modelling tool to predict weed community dynamics under different management strategies and environmental conditions that is pertinent to both current and future growing conditions in the EU. The

visit provided the opportunity to compare modelling approaches and discuss how these should be carried forward in view of the European Research Area. This will help develop innovative and more environmentally benign weed management strategies.

6. Impact

Added value for the researcher:

The researcher has gained knowledge on the WeedML language and UniSimulator modelling approach. This knowledge is a valuable extension of the researcher's expertise on weed ecology and management. The collaboration between researchers of the hosting and sending partners benefits current and future research programs on perennial weeds from both partners. The visit facilitated the knowledge exchange between partners which provided the researcher with new insights and approaches on weed research.

Added value for sending partner and hosting partner:

The construction of a perennial growth model was started, of which both the sending as well as hosting partner will be able to benefit. The model also provides a good basis for further collaboration on perennial growth in the near future. Joint experiments and a joint publication have been planned for 2010.

Date of submission 4/11/2009



Dr. Maurizio Sattin
IA3 activity leader

Approved