



European Network for the Durable Exploitation of Crop Protection Strategies

IA3 activity: human resource exchange
SA3.2 sub-activity: foster the participation of research teams
from INCO target countries

ENDURE Grants for INCO scientists

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)

1. Information about researcher and sending partner

Name and surname: Wendy Ann Isaac-George

Professional status: Assistant Lecturer/ Researcher

Sending partner: The University of The West Indies

Institute/Department/Research Unit: Department of Food Production, Faculty of Science & Agriculture

Address: St. Augustine, Trinidad, West Indies

E-mail and phone number of the researcher: wendy-ann.isaac@sta.uwi.edu; wendyann6@hotmail.com; 1 868 664 1805

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: Scuola Superiore Sant'Anna

Institute/Department/Research Unit: Land Lab

Address: Piazza Martiri della Libertà, 33 – 56127 Pisa (Italia)

Supervisor name*: Prof. Paolo Bàrberi

Supervisor e-mail*: barberi@sssup.it

Supervisor phone number*: 0039-050/883525

* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Duration: 3 months

Starting date: 12 May 2010

Ending date: 10 August 2010

4. Description of the activities and outcomes

Background and context:

Organic production of good quality carrot and vegetables in general is regarded as difficult. The consensus among farmers is that without the use of herbicides for weed control, yield would be reduced. Carrot in particular is not very competitive, primarily because of its small seeds and slow initial growth and limited capacity to cover the soil (Peruzzi et al. 2004 and 2007). The slow germination of carrot seeds gives weeds the competitive advantage. Weeds grow faster and compete for nutrients and sunlight in the early stages of crop growth. If left unchecked, weed growth can have a negative impact on carrot yield. One of the main technical constraints to organic carrot growing is the limited range of effective direct weed control means capable of replacing chemical herbicides.

It is essential to manage emerging weeds from seedbed preparation throughout the development of carrot for optimum yield. Researchers have focused on preventive control strategies to provide carrot with an initial competitive advantage (Bàrberi 2002; Peruzzi et al. 2006), such as, a three-year crop rotation which will reduce weed pressure, improve yield and quality by decreasing populations of the nematode *Meloidogyne hapla* Chitwood.

Research has shown that soil disinfection significantly contains populations of soil-borne pathogens and serves as an effective preventive weed control strategy. Soil solarisation, steam soil disinfection and flaming both offer effective pre-emergent weed management in carrot. To further ensure effective weed management post-emergent physical treatments must also be considered.

Objective:

- (1) To observe and assess the IPM approaches used in weed management of vegetables.
- (2) To increase knowledge and skills in weed assessment techniques.

Activities carried out:

May 2010 –

- Attended session at Centro Interdipartimentale di Ricerche Agro-ambientali – CIRAA (Centre for Inter-departmental research in the Agri-environment) presented by Prof. Marco Mazzoncini on an overview of the activities of CIRAA.
- Visited PhD student project on Weed Population dynamics and long-term MASCOT cropping systems experiments at CIRAA.
- Meeting with Prof. Peruzzi and research team at the University of Pisa to discuss research activities.
- Attended course on “Principles of Agrobiodiversity” in the International Doctoral Programme in Agrobiodiversity.
- Assisted in the collection of data in ENDURE trial on the weed suppressive effects of IPM systems 1 – 3 in carrots.
- Observed flaming and harrowing treatments on ENDURE trial.
- Observed and assisted in the collection of data on turfgrass flaming project.
- Visited Organic farm in Pratini di Cedri, Peccioli (Pisa) and viewed Germplasm collection of hard and soft wheat in Farmer Participatory session.

June 2010 –

- Attended course on “Principles of Agrobiodiversity” in the International Doctoral Programme in Agrobiodiversity.
- Observed the sowing of carrots in the ENDURE trial.
- Performed flaming using a knapsack flaming unit in ENDURE trial.
- Observed flaming using tractor driven flaming machine in buffer strips in ENDURE trial.
- Observed steaming in an urban area.
- Observed bench flaming trials in a greenhouse to test the tolerance of a warm season turfgrass species (*Zoysia tenuifolia*).
- Assisted in the collection of digital image for analysis using web-based imaging software.
- Assisted in the collection of data in ENDURE trial on the weed suppressive effects of IPM systems 1 – 3 in carrots.

July 2010 –

- Assisted in collection of data in trials at SSSUP and the University of Pisa which included: (1) bioenergy grass trials and (2) weed population dynamics trial.
- Observed harrowing of carrots in ENDURE trial.
- Assisted in the collection of data (weed assessment, crop emergence % before and after harrowing etc.) in ENDURE trial.
- Observed and assisted in application of treatments in Bioflash® soil steaming trial using exothermic compounds (CaO) and Celli ECOSTAR SC600 in turfgrass at San Piero a Grado.
- Visit to Centro Di Ricerca Interuniversitario Biomasse da Energia (CRIBE).
- Seminar presentation on research work in Trinidad.
- Submission of final activity report.

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

The visit corresponds to the following ENDURE activities:

- RA1. Optimising and reducing pesticide use: Field Vegetables Case Study

Experience gained at SSSUP/DAGA will be extremely beneficial to the development of my research programme at UWI in crop protection. The programme has enabled me to acquire new ideas and increased knowledge on various integrated crop management approaches used in reducing pesticide use.

6. Impact

Added value for the researcher: *maximum 10 lines*

This 3-month stay at the SSSUP and DAGA, The University of Pisa offered me the opportunity to:

- increase my understanding of mechanical and physical weed management techniques used in vegetable production systems.
- improve practical skills in field research techniques.
- garner a better understanding of the principles in agrobiodiversity.
- observe and improve on teaching techniques for small groups in particular.
- garner new teaching ideas, new research approaches and methodologies for the supervision of my students.
- observe the work ethics and dynamics of researchers in various research groups.
- establish valuable contacts for further collaborative research.

Added value for sending partner and hosting partner: *maximum 10 lines*

This stay opportunity will enable the Department of Food Production, UWI and the hosting partner to establish a link in terms of further research collaboration. An equivalent research programme using similar IPM systems will be established in trials on return to Trinidad for weed management in vegetable crops. As an additional follow-up activity, Prof. Bàrberi agreed to be external examiner for the next three years in the undergraduate and post-graduate courses run by UWI-St Augustine Campus (Tropical Crop Protection and Weed Science).

Date of submission

13 August 2010



Dr. Maurizio Sattin
IA3 activity leader

Approved