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. elisa.scanzi@ibaf.cnr.it – within 15 days after the end of the visit)

1. Information about researcher and sending partner

Name and surname: Reda Abdalla Abdelaziz

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

Sending partner: Horticulture Research Institute

Institute/Department/Research Unit: Horticulture Research Institute/Citrus Dept./Organic Agriculture

Address: *(street, postal code, city)* Cairo Univ. St., 12619, Giza, Egypt

E-mail and phone number of the researcher: rody123453@yahoo.com – r.abdelaziz@sssup.it +2020104230586 - +39 389 0535882

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. Dr. Paolo Barberi
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: *(number of weeks or months)* 3 months
Starting date: 3 Feb., 2009
Ending date: 2 May 2009

4. Description of the activities and outcomes

Background and context: *maximum 10 lines*

Weeds are a serious problem in horticultural orchards. It causes yield and fruit quality reduction due to the competitiveness on the irrigation, nutrition and its role to host the harmful insects. The problem becomes much more important in organic agriculture farms since the use of herbicides is forbidden. Moreover, the organic growers don't have sufficient information on which weed management strategies are most effective or which weed management program can be used in order to maximize yield and fruit quality.

In this respect, the application of organic agriculture techniques, e.g. cover crops, considered as a preventive approach. Advantages of using cover crops include the ability to adjust pH of soil, reduce salts from soil, and provide a source of available organic nutrients as well as organic matter to plants once the cover crop biomass is incorporated into soil (McCloskey et al., 1997).

Moreover, regardless of how healthy or alive soil is, cover crops can play a vital role in ensuring that soil provides a strong foundation for farming system. While, the most common reasons for including cover crops in a farming system may relate to the current season, the continued practice of cover cropping becomes an investment in building healthy soil over the long term. Cover crops improve soil in a number of ways. Protection against soil loss from erosion is perhaps the most obvious soil benefit of cover crops, but providing organic matter is a more long-term and equally important goal. Cover crops contribute indirectly to overall soil health by smothering, shading or competing weeds, catching nutrients before they can leach out of the soil profile or by adding nitrogen to the soil. Their roots can even help unlock some nutrients, converting them to more available forms. Cover crops provide habitat or a food source for some important soil organisms, break up compacted layers in the soil and help dry out wet soils (Sustainable Agriculture Network, 1998).

Objective: *maximum 10 lines*

1- Exchanging the knowledge between the Scuola Superiore Sant'Anna and DAGA, University of Pisa, Italy and Horticulture Research Institute, Egypt in order to promote sustainable crop protection, future research/techniques and share experience of complex tropical crop-pest systems which may be of benefit to European agriculture and or Egypt.
2- Enhancement the use of environmentally and economically methods and techniques to manage weeds under the Mediterranean regions.
3- Recognised the Italian experience in the field of weed physical control and integrated methods

Activities carried out: *maximum 20 lines*

Month 1: Arrival – attending activities of the SSSUP Winter School in Landscape Agronomy (23-27 February 2009) - Exploring the hosting institute taking overview about its activities –help in collecting the field data – Visiting the experimental fields, long-term cropping systems experiments and harvest organic vegetable samples - Take the primary measurements i.e. samples weight and store the data on the computer using a new bar code technique - Field visits to some orchards and experimental sites – Attending workshop of "Contrasto con Mezzi non -Chimici alle Piante Infestanti in Ambito Urbano" in Pisa University - Attending lectures and seminars about weed management with new technologies.
Month 2: Working in Land Lab and MAMA DAGA dept., Faculty of Agriculture, Pisa -Attending lectures and seminars about weed modeling and competitions- Flaming machines - Training session about weed classification- Working in the lab with the team work of SSSUP and Faculty of Agriculture - Attending a course of "Experimental methodology in Agricultural sciences" in Scuola Superiore Sant'Anna, - Visiting agricultural college in Florence to attend PhD dissertation on weed physical methods - Visiting SSSUP's and DAGA's experimental fields in San Piero a Grado (Pisa) taking an overview about the on going and the long term experiments and the future plans.
Month 3: Attending seminar about "Ecology of birds in human-altered landscapes: case studies from Canada and South Africa" Mark Bidwell, Department of Biology, University of Saskatchewan, Saskatoon, SK, CANADA - Continue Attending the course of "Experimental methodology in Agricultural sciences" in Scuola Superiore Sant'Anna, - Attending a course of "Management of Biodiversity in Sustainable Farming Systems" in Scuola Superiore Sant'Anna - Agrees on the future cooperation plan between the Institute in Egypt and SSSUP/DAGA in Italy – Attending seminar ""Gestione della vegetazione infestante con impiego di organismi utili e sostanze naturali" Dr Maurizio Vurro, Istituto di Scienze delle Produzioni Alimentari – CNR Bari - Introducing presentation about "Recent Developments in Horticulture Sector in Egypt" (24 April 2009) - Writing the final report –Stand by for Departure.

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

RA1. Optimising and reducing pesticide use
Integrated weed management (IWM)
Field vegetables case study
Building an integrated weed management strategy including all the possible non chemical and alternative solutions is one of the research working period aims. Since the research working period and its activities are in progress together with sharing in the recent research works both in the lab and in the field, taking an idea about the recent and long period research plans dealing with the non chemical weed management, the knowledge and experience exchanging is going to be ended by the end of this month, the benefits is obviously clear. I have learned many new things and techniques that may be apply for weed management in the field as well as the other two teams from Land Lab (Scuola Superiore Sant'Anna and DAGA, University of Pisa). The two presentations I have given about the recent horticulture development in Egypt and a case study of some weed management in Toshka project, South Egypt and the agriculture sector in Egypt gives an over view on how the farmers and the government deal with the problem of weeds in Egypt. It also indicates that more efforts need to be done in order not only to reduce the use of the chemical herbicides and to enhance the use of the other alternatives i.e. physical weed management, flaming, mulch and the crop rotation through some collaborative projects but also to optimise the efficacy and the cost effectiveness of these tools. However, some future collaborative work in the same field of weed management has been discussed.

6. Impact

Added value for the researcher: *maximum 10 lines*

At personal level:

1- Exchanging knowledge and awareness on the new techniques to manage weeds in horticultural orchards.
2- Design and or modify the flaming tools that can be used to control weeds.
3- Open the way for more cooperation and complementary researches between me, my institute and the researchers in SSSUP and DAGA.
4- It gave me the opportunity to enhance my communication skills.

At scientific level:

1. To evaluate some of the alternative methods (living mulch cover crops (Egyptian clover), barley or mixture of clover with barley, minimize tillage, plant residues mulch or weed flaming using local invention tool,) that can be used in horticulture under organic agriculture technique.
2. To present the most effective strategies and solutions that can be environmentally, economically and socially viable for managing the weeds in organic horticultural orchards.
3. To reduce weed competition and its negative impact on horticulture fruit yield and quality.
4. To establish a preventive weed management program that can be used all the year round in horticulture orchards.
5. Reducing the environment pollution resulted from the use of chemical herbicides.
6. Eliminate the farmers' hazards when exposed to the herbicides.
7. Helping expansion the organic agriculture in developing countries.

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

For the sending partner

- Establishing a relationship between Horticulture research institute and (1) Land Lab, Scuola Superiore Sant'Anna and (2) DAGA, University of Pisa and strengthen the cooperation in the related topics
- Inform the staff member of SSSUP and DAGA about the activities of Horticulture Research Institute.

For the hosting partner

- The fellow share in the ongoing researches activities both in SSSUP and the collaborative researches with ENDURE.
- Exchanging the experience between the fellow and the researchers and PhD students working at SSSUP and DAGA.
- Enhancing the collaborative researches between HRI, Egypt and SSSUP/DAGA, Pisa, Italy

Date of submission
4/5/2009

endure
diversifying crop protection

Dr. Maurizio Sattin
IA3 activity leader

Approved