

## EUROPEAN WEED RESEARCH SOCIETY

Europäische Gesellschaft für Herbolgie • Société Européenne de Malherbologie



### JOINT WORKSHOP OF THE EWRS WORKING GROUPS: NOVEL AND SUSTAINABLE WEED MANAGEMENT IN ARID AND SEMI-ARID AGRO ECOSYSTEMS AND WEED MAPPING

Organized by



European Weed Research Society



Agricultural University of Athens

## BOOK OF ABSTRACTS

Edited by

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29 September - 03 October 2013

Mediterranean Agronomic Institute of Chania Crete, Greece

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**Session Organizers:**

**Weed mapping**

Moderators: Salonen J and Stefanic E

**Parasitic weeds**

Moderators: Goldwasser Y and Acar O

**Herbicide Resistance**

Moderators: Kotoula E and Nemli Y

**Weed Biology**

Moderators: Yaacoby T and Uludag A

**Weed Mapping Round Table**

Moderators: Kraehmer H, Kalivas D, Streibig J, Eizenberg H

**Weed Management**

Moderators: Vrbnicanin S and Mennan H

**Poster session**

Moderators: Economou G and Eizenberg H

**Administrative Organization:**

Conference Center of Mediterranean Agronomic Institute of Chania

**Book of Abstracts published by**

Agricultural University of Athens

## PREFACE

Welcome to the “Joint Workshop of the EWRS Working Groups: Novel and Sustainable Weed Management in Arid and Semi Arid Agroecosystems and Weed Mapping”, in the beautiful city of Chania, in the hospitable region of Crete, the southern part of Europe.

We gathered here in Mediterranean Agronomic Institute of Chania (MAICh), to enjoy the unique experience of sharing scientific knowledge and collegial interactions among scientists, with the common interest to increase the rate of progress in the two important sectors for weed science; “the sustainable weed management in the fragile environment of arid and semi arid regions” and “weed mapping”.

The idea of the Joint Workshop was not a temporal approach but the result of a matured thought on behalf of the two working groups for interactive process. Actually, the aims and the tasks of the two WGs in addition to their parallel scientific paths often meet, interact positively and generate ideas and solutions for an effective weed control with environmental point of view.

In the region of the Mediterranean basin, at the crossroads of climate change, particularly for those regions which are located in the center of these changes and subjected by the dramatic reduction of water resources, the need to enforce the crops in terms to the competitive superiority of weeds obtains a prominent role. Despite the advances in biology, ecology, physiology and plant protection, weeds continue to keep their competitive advantage in such a way that unanswered questions seek answers. On this account, we decided to share ideas around the current status of climatic changes on the weed distribution in order to understand their dynamic role in agroecosystems. The questions, the challenges and the goals will be put into consideration.

The scientific program contains keynote addresses, invited lectures, plenary presentations, a round table, poster presentations, a field excursion to meet with the good practice in improving the weed management and environmental performance in the olive oil sector, as well special social activities. Enjoy your participation in the MAICh conference centre and your stay in the hospitable Chania.

The organizers:

### **EWRS Working Groups**

**“Novel and Sustainable Weed Management in Arid and Semi Arid Agroecosystems”**

**“Weed Mapping”**

### **Agricultural University of Athens**

# **Scientific Program**

**September 29 – October 3, 2013**

Oral conference sessions will take place in auditorium **ARISTOTLE**

Poster session at room **THALES**

## **Sunday, September 29<sup>th</sup>**

18:00-19:00 Arrival and registration at the Conference Center Office of MAICH

18:00- 19:00 Poster mounting

19:00-21:00 Welcome reception in MAICH at the restaurant "Méditerranée"

**Registration desk will be open throughout the day.**

## **Monday, September 30<sup>th</sup>**

### **Opening Ceremony**

07:30-08:30 Registration at the Conference Center Office of MAICH

Moderator B. Rubin and G. Economou

08:30-09:20 Welcome address:

**Prof. B. Rubin**, Chairman of the Scientific Committee and the working group of novel and sustainable weed management in arid and semi-arid agroecosystems.

**Prof. Garifalia Economou**, Chairman of the Organizing Committee and the working group of weeds mapping.

### **Greetings**

Mr. Stavros Arnaoutakis, Governor of Crete Region

Dr. George Baourakis, Director of MAICH

09:20-09:50 (1) (*Keynote address*) Water management and crop/weed interactions under a changing climate in the Mediterranean basin. [A. Karamanos](#).Greece.

09:50-10:20 (2) (*Keynote address*) Weed mapping as a tool for control of weed resistance and invasive species: Experience from Nebraska. [S. Knezevic](#). USA.

10:20-10:30 Discussion

**10:30-11:00 *Coffee break***

### **Poster session**

11:00-12:30 Poster observation

**12:30-14:00 Lunch**

### Weed mapping

Moderators **Salonen J and Stefanic E**

14:00-14:30 (3) (*Keynote address*) Where do weed maps lead us? [H. Kraehmer](#). Germany

14:30-14:50 (4) (*Invited lecture*) Parasitic weed mapping to improve management: the case of broomrape in tomato crops. [Y. Cohen](#), I. Roei, H. Eizenberg. Israel

14:50 -15:05 (5) An interactive web-based application for weed resistance mapping. [S. Panozzo](#), M. Colauzzi, L. Scarabel, A. Collavo, V. Rosan, M. Sattin. Italy.

15:05-15:20 (6) Weed mapping in Finland – information from field to web. [J. Salonen](#), M. Kolářová, P. Hamouz, J. Soukup. Finland.

15:20-15:35 (7) The Weed Science Society of Israel Weed Mapping Project. [Y. Goldwasser](#), Israel.

**15:35-16:05 Coffee break**

16:05-16:20 (8) Are results obtained by different sampling methods comparable? [M. Kolarova](#), E. Stefanic, J. Soukup. Czech Republic and Croatia.

16:20-16:35 (9) Weed mapping as a tool for developing an economical and environmentally friendly weed management practice in cotton. [G. Shalev](#), H. Eizenberg, B. Rubin. Israel.

16:35-16:50 (10) Weed mapping using high resolution imaging from a tetracopter drone. [V. Alchanatis](#), C. Shenderay, S. Katsman, Y. Cohen, S. Meital, G. Shalev, B. Rubin, H. Eizenberg. Israel.

16:50-17:05 (11) Weed patchiness, providing the necessary data for a potential site-specific weed management. G. Economou, [D. Kalivas](#), I. Thomopoulos, V. Kotoulas. Greece.

17:05-17:20 (12) Weed survey project in Latvia. [I. Vanaga](#), Z. Mintale. Latvia.

17:20-17:30 Discussion

**20:00 Dinner**

Tuesday, October 1<sup>st</sup>

### Parasitic weeds

**Moderators: Goldwasser Y and Acar O**

08:30-09:00 (13) (*Keynote address*) Advanced technologies for tempo-spatial modeling of broomrapes (*Orobanche* and *Phelipanche* spp.) and herbicides application, [H. Eizenberg](#). Israel

09:00-09:15 (14) Aspects of glyphosate mechanism in Egyptian broomrape control. [T. Shilo](#), S. Wolf, B. Rubin, H. Eizenberg. Israel

09:15-09:30 (15) Effects of salt stress (NaCl) and broomrape (*Phelipanche aegyptiaca*) on superoxide dismutase and peroxidase activities of two tomatoes varieties. B. Şen, [O. Acar](#). Turkey

09:30-09:45 (16) Variation in response of a resistant sunflower cultivar to *Phelipanche aegyptiaca* and *Orobanche cumana*. [O. Ben David](#), B. Rubin, H. Eizenberg. Israel

09:45-10:00 (17) (*Invited*) Development of molecular markers based on ITS and rbcL genes to identify and distinguish between broomrape species in a soil sample. [R. Aly](#), A. Londner, M. Kocherman, J. Abu-Nassar, I. Saadi, H. Eizenberg. Israel

10:00-10:15 (18) Modeling imazapic movement applied by drip irrigation to maximize broomrape control. O. Rabinovitz, [Y. Goldwasser](#), Z. Gerstl, A. Nasser, N. Lazarovitch, G. Aryeh, A. Paporisch, B. Rubin. Israel

10:15-10:30 Discussion

**10:30-11:00 Coffee break**

### Resistance

**Moderators: Kotoula E and Nemli Y**

11:00-11:15 (19) Proposed glyphosate resistance mechanism in *Conyza bonariensis*. [Z. Kleinman](#), B. Rubin. Israel

11:15-11:30 (20) Absorption and translocation of C<sup>14</sup>-glyphosate in the glyphosate resistant *Conyza sumatrensis* under two different temperature regimes. [F. González-Torralva](#), J.A. Domínguez-Valenzuela, R. De Prado. Spain.

11:30-11:45 (21) New and dangerous evolution of ALS-resistant Brassicaceae weed species. [M. Matzrafi](#), B. Rubin. Israel.

11:45-12:00 (22) Screening for glyphosate-resistant *Conyza* spp. in Greece and mechanism of resistance. [D. Chachalis](#), E. Tani, I.S. Travlos, R.D. Sammons. Greece

12:00-12:15 (23) BriFAR: A comprehensive resource for functional characterization of herbicide resistance mechanism in grass weeds. [M. Matzrafi](#), Y. Gadri, B. Rubin, Z. Peleg. Israel

12:15-12:30 Discussion

**12:30-14:00 Lunch**

### Weed Biology

**Moderators: Yaacoby T and Uludag A**

14:00-14:30 (24) (Keynote address) Weed research in Serbia. [Sava Vrbnicanin](#), Serbia.

14:30-14:45 (25) Effects of cover crops and their residues on weed suppression and subsequent composite cross populations of maize in organic cropping system. [N. Nol](#), G. Bocci, A.C. Moonen, P. Bàrberi. Italy

14:45-15:00 (26) Cover crops as a tool for prevention of soil erosion and weed management in potatoes. [E. Hayut](#), Y. Goldwasser, G. Eshel, B. Rubin. Israel

15:00-15:15 (27) An analytical approach to evaluate the effect of imported outdoor ornamentals on flora in turkey. İ. Üremiş, Y.E. Ertürk, [A. Uludağ](#). Turkey

15:15-15:30 (28) Distribution and control of *Ambrosia* spp. (Ragweed) in Israel. [Y. Yair](#), Y. Mekori, M. Sibony, A. Goldberg, E. Shahar, and B. Rubin. Israel

15:30-15:45 (29) Seedling emergence of *Echinochloa crus-galli* affected by soil depth. [A. Taab](#), M. Sadeghi. Iran

15:45-16:00 (30) Investigation of using cover crops in weed control on Kiwi orchards in black sea region of Turkey. [D. Isik](#), M. Dok, K. Ak, I. Macit, Z. Demir, H. Mennan. Turkey

16:00-16:15 Discussion

**16:15-16:45 Coffee break**

16:45-18:00 **Weed Mapping Round Table**

Moderators: **Kraehmer H, Kalivas H, Streibig J, Eizenberg H**

Status of weeds distribution/rules for data collection and processing

## Wednesday October 2<sup>nd</sup> program

Whole day

1. Field excursion,
  2. Visit to traditional oil-mill (<http://www.biolea.gr/>)
  3. Visit to Falassarna, one of the best-known beaches in the Chania Prefecture and indeed the whole of Crete, which attracts large numbers of tourists every summer. Nowadays Falassarna is a famous Cretan destination, thanks to its beaches and also its ecological interest. Falassarna is part of the Natura 2000 network, both due to its variety of flora and fauna and as an area of outstanding natural beauty.
- 4. Gala dinner**

## Thursday October 3<sup>rd</sup>

### Weed Management

**Moderators: Vrbnicanin S and Mennan H**

- 08:30-09:00 (31) (Keynote address) The benefits of using a pre-emergence herbicide (pendimethalin) for weed control in crops of Southern Europe. E. Marín-Arroyuelo, A. Marchi, F. Marchal-Rubio, C. Bozoglou, F. Servis, [C.N. Giannopolitis](#). Greece
- 09:00-09:15 (32) Relative tolerance of weedy sunflower to nicosulfuron applications. S. Vrbnicanin, [D. Bozic](#), M. Saric-Krsmanovic, D. Stojicevic. Serbia
- 09:15-09:30 (33) Sensitivity of different *Zea mays* (shrunken endosperm type) cultivars to the herbicide foramsulfuron. [A. Paporisch](#), T. Weinberg, B. Rubin. Israel
- 09:30-09:45 (34) Molecular techniques for discrimination of *Echinochloa oryzicola* and *Echinochloa oryzoides* species and their distribution in Turkish rice production areas. [H. Mennan](#), E. Kaya-Altop. Turkey
- 09:45-10:00 (35) Some thoughts on strategies for management of *Solanum elaeagnifolium*. [C.E. Bell](#). USA
- 10:00-10:15 (36) The possible impact of a 2°C air temperature increase on the weed flora and an arable crop in Greece. [D.S. Voloudakis](#), V.E. Kotoulas, C. Vlachos, G. Economou. Greece
- 10:15-10:30 (37) Creation of national program to manage *Ambrosia confertiflora* in Israel. [T. Yaacoby](#), J.M. Dufour-Dror, A. Zask, D. Milstein, A. Uzan. Israel

**10:30-11:00 Coffee Break**



## Poster session

### Moderators: Economou G and Eizenberg H

11:00-12:30 Poster observation and discussion

### 12:30-14:00 Lunch

#### Weed Management

14:00-14:15 (38) Imazapyr is a best solution for non-selective management of *Ambrosia confertiflora* in Israel. [T. Yaacoby](#), J.M. Dufour-Dror. Israel

14:15-14:30 (39) The vegetation in archaeological sites. An approach of integrated weed management to protect the historical landscape - Thalys project. [I. Kanellou](#), D. Lyra, S. Knezevic, G. Economou and M. Papafotiou, Greece

14:30-14:45 (40) The effect of a long-term irrigation with treated wastewater on the fate of ALS inhibiting herbicide in the soil. [G. Dvorkin](#), M. Sibony, B. Chefetz, B. Rubin. Israel

14:45-15:00 (41) The usage of PELMO model to estimate the influence of the climate change on the pollution of the groundwater: The case for terbuthylazine. [S. Vizantinopoulos](#). Greece

15:00-15:15 Discussion

### 15:15-15:45 Coffee break (Posters collection)

15:45-17:00 Working group discussion and conclusion

17:00-17:30 Closing Ceremony: Moderators: Prof. B. Rubin and Prof. G. Economou

### 20:00 Dinner (Event in honor of Prof. Rubin retirement)

#### Posters

(42) Phytotoxicity of a medicinal plant, *Hypericum perforatum* against grass and broadleaf weeds of faba bean (*Vicia faba*) and its potential use as natural herbicide. [I.S. Travlos](#), G. Economou, P. Kanatas, A. Gatos. Greece

(43) Study of hydrolysate and emulsion bioactivity of two *Origanum onites* biotypes on *Avena sterilis*, *Echinochloa crus-galli* and *Amaranthus retroflexus* seeds. A. Kamini, D. Lyra, E. Gavriil, I. Travlos, P. Tarandilis, [G. Economou](#). Greece

- (44) The effect of some cultivated plants root exudates and green manures on the germination and growth stages of *Sinapis alba* L. (White mustard). [Ö. G. Dişli](#), Y. Nemli. Turkey
- (45) Investigation of the effect of thyme oil on germination of some crops and weed species. [Y. Sokat](#), K. Kaçan. Turkey
- (46) *Oxalis pes-caprae* plant extract reduces negative effects of aflatoxin B1 on oxidative stress and inflammation in swine blood. [D. Marin](#), M. Gras, E. Weiss, P. Kefalas, I. Țaranu, V.S. Chedea. Romania and Greece
- (47) Cloning and sequencing of virus inhibiting gene encoding an antiviral protein from the leaves of pokeweed (*Phytolacca americana* L.). [H.M. Sipahioglu](#), I. Kaya Yagmur, M. Usta, S. Samsun. Turkey
- (48) Habitat suitability and spectral heterogeneity models. [C. Fotiou](#), J. Dalmyne, K. Hall. Sweden
- (49) Breaking dormancy at seeds of *Cuscuta approximata* Bab. [R. Yergin Özkan](#), D. Işık, Tepe, Turkey
- (50) Determination of the frequencies and densities of broomrape and other weed species occurring in field tomato, sunflower and tobacco fields in Denizli Province of Turkey. [Ö. Boz.](#), M.N. Doğan, D. Öğüt Yavuz. Turkey
- (51) Mowing as a key method against herbicide-resistant weeds. [I.S. Travlos](#), J. Costa I. Brants, D. Chachalis. Greece
- (52) Comparison of the germination biology and growth stage of resistant and sensitive wild oats (*Avena sterilis* L.) to ACCase inhibitor herbicides. [P. Molaei](#), Y. Nemli. Turkey
- (53) Genetic variation and phenological characteristics of ACCase inhibitor resistant and sensitive populations of *Avena sterilis* L. [P. Molaei](#), Y. Nemli. Turkey
- (54) First report on herbicides resistance of wild oat (*Avena fatua* L.) in Turkey. [S. Türkseven](#), Y. Nemli. Turkey
- (55) Detection and degradation of linuron in soils and its uptake by carrots. [A. Alev Burçak](#), E. Cönger M. Selçuk Başaran, A.T. Serim. Turkey
- (56) Determination of the effect of nitrogen on critical period for weed control in cotton (*Gossypium hirsutum* L.). [N. Tursun](#), E. Tunçel. Turkey
- (57) Determination of weed emergence in sunflower. [K. Kaçan](#), N. Tursun, A. Uludağ. Turkey

- (58) Weed seed bank as affected by weed and crop management. [S. Babaei](#), P. Hosseini, H. Karimi H., H. Alizadeh, H. Rahimian. Iran
- (59) Studies on the interaction of seed vigor with weed competition. [D. Chachalis](#), E. I. Khah, P. Georgiadi and P. Terzopoulos. Greece
- (60) Seedling emergence of *Convolvulus arvensis* affected by moisture regimes and soil depths. [A. Taab](#), A. Sangin Abadi. Iran
- (61) Physical, cultural and chemical weed control in direct seeded rice (*Oryza sativa* L.). [K. Jabran](#), M.I. Tabassum, M. Ehsanullah, N. Dogan. Turkey
- (62) Soil-applied herbicides for weed control in chickpea (*Cicer arietinum* L.) under a dryland cropping system. [T.K. Gitsopoulos](#), C.A. Damalas, I. Georgoulas. Greece
- (63) Weed Science Society of Greece (WSSG): actions and collaborations. [D. Chachalis](#), A. Afentouli, I. Travlos, A. Kazantzidou, G. Economou, S. Zannopoulos, T. Gitsopoulos. Greece
- (64) Determination of the effect of different additives on the performance of 2,4-D amine. [D. Ögüt-Yavuz](#), Ö. Boz, M.N. Doğan. Turkey
- (65) The sensitivity of some sunflower cultivars to residue of mesosulfuron methyl + iodosulfuron methyl sodium under growth chamber conditions. [A.T. Serim](#), S. Maden. Turkey
- (66) Field studies to control the invasive weed species *Euphorbia heterophylla* in cotton. [D. Chachalis](#), I.S. Travlos. Greece
- (67) Investigation of planting date, fertilizer and herbicide effects on Egyptian broomrape. [M. G. Mohammadabadi](#), M. Bazoubandi, M. Ghorbani, M. Zafarian. Iran
- (68) Investigation of planting date, manure, cultivar on Egyptian Broomrape. [M. G. Mohammadabadi](#), M. Bazoubandi, M. Nasirpour, M. Zafarian. Iran
- (69) Effects of sulfosulfuron, aclonifen, foramsulfuron and metribuzin herbicides on tomato production (*Lycopersicon esculentum* L.). [M. G. Mohammadabadi](#), M. A. Mehdi Nasirpour, M. Zafarian. Iran
- (70) Effectiveness and selectivity of herbicides in stevia. [P. Lolos](#), S.P. Souipas. Greece

**(25) Effects of cover crops and their residues on weed suppression and subsequent composite cross populations of maize in organic cropping system**

Noi N., G. Bocci G., A.C. Moonen and P. Bàrberi

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In organic cropping systems cover crops have the potential to develop into a crucial factor of an ecological weed management strategy. To determine the effects of various cover crop species and their residues on the weed suppression and agronomic performance of composite cross populations (CCPs) of maize (*Zea mays* L.), the field experiment was set up under suboptimal climatic conditions in the period from September 2011 to October 2012. The following three cover crop types were grown between cash crop: (1) *Brassica juncea* (L.) Czern. cv. ISCI 20; (2) *Vicia villosa* Roth cv. *Latigo*; and (3) a mix of seven cover crop species (*Fagopyrum esculentum* Moench, *Lupinus albus* L., *Phacelia tanacetifolia* Benth., *Pisum sativum* L., *Trifolium alexandrinum* L., *Trifolium incarnatum* L. and *V. villosa*). The results obtained were compared with no-cover crop plots and two maize hybrids, conventional and organic. *V. villosa* in pure stand was the most productive and stable cover crop (509,43 gm<sup>-2</sup>), with the highest weed suppressive effect (63,24% weed reduction). Consequently as a leguminous species, residues of *V. villosa* significantly increased development and growth of the maize cultivars (2,102 tha<sup>-1</sup>) compared to the control plots (1,85 tha<sup>-1</sup>). The lowest weed suppression effect (only 23% weed reduction) and total maize biomass production (1,42 tha<sup>-1</sup>) was observed under Mix 7 treatment, as a result of poor establishment and adaptation of that cover crop type (188,75 gm<sup>-2</sup>). Multiple comparisons of the different maize cultivars showed that CCPs and organic hybrid achieved similar dry grain production value, while the conventional hybrid had the best agronomic performance. The whole-grain analysis indicated that the choice of cultivar and not the green manure treatment, had the high significance on the quality of the final product. These findings showed that weed suppression and green manure effects of the cover crops under abiotic stress conditions are greatly influenced by individual species adaptation, agronomic management and within system compatibility of the subsequent maize genotype.