ZeroParasitic

ZEROPARASITIC
October 2023, Issue 4

ZeroParasitic" is a PRIMA section II project, officially started on April 10th 2020 and finished on October 9th 2023. The project is coordinated by Benaki Phytopathological Institute (BPI), Athens, Greece.

Word from the Coordinator

In this fourth and final issue of the ZeroParasitic Newsletter (issue no. 4), we present the research results presented during the International Scientific Workshop on Parasitic Plants Orobanche spp. / Phelipanche spp. This workshop, organised by the ZeroParasitic project in collaboration with our Tunisian partner INRAT in Tunis, was a major success. The decision to convene this scientific meeting was taken during our last meeting in Amman (Jordan) in May 2022. It was a great opportunity for me to meet most of the scientists of the project and the Tunisian participants working on parasitic plants affecting important crops in the country.

I am satisfied with the level of research results presented by the ZeroParasitic team and also achieved in other contexts. The results obtained will certainly have an impact and help to increase the cultivation of tomatoes and legumes, especially faba beans. During my mission in Tunisia, I had the privilege of attending the ATSB (*Association Tunisienne des Sciences Biologiques*) congress, which took place in Sousse from March 18 to 21, 2023, together with some colleagues from the ZeroParasitic project. This experience has further enriched our collaboration and engagement with the wider scientific community and is in line with our common goal of advancing agricultural practices.

Dr. Dimosthenis Chachalis
Δημοσθένης/Χάχαλης

BENAKI PHYTOPATHOLOGICAL INSTITUTE (BPI Athens; Greece)

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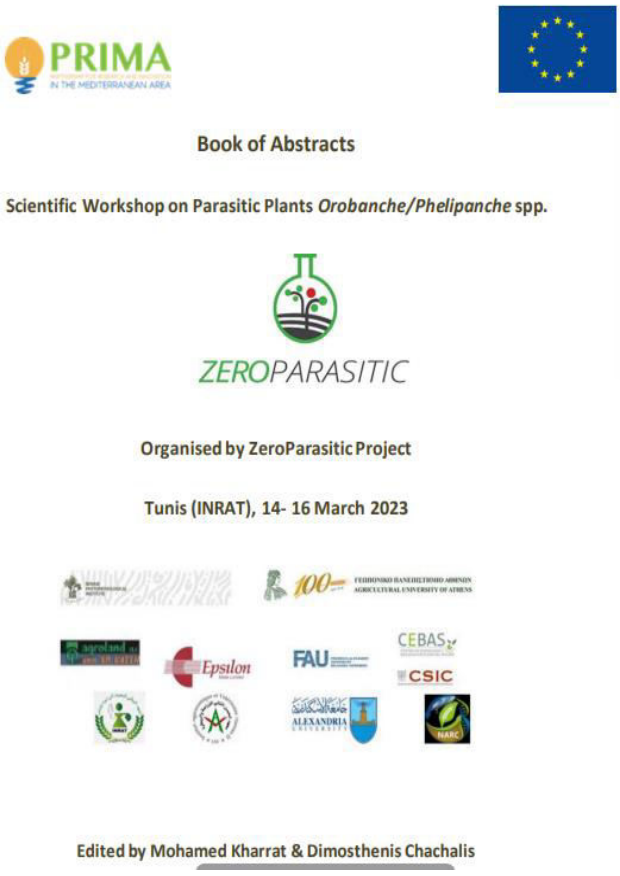
ZeroParasitic : Physical Scientific Workshop on Parasitic Plants Orobanche/Phelipanche spp. meeting

from 14 to 16 March 2023 Tunis (Tunisia):

The ZeroParasitic consortium in collaboration with the National Agricultural Research of Tunisia (INRAT) organized an International Workshop on Parasitic Plants Orobanche/Phelipanche spp., in Tunis (Tunisia) from 14 to 16 March 2023.

The National Agricultural Research Institute of Tunisia hosted the workshop. Delegations from Greece, Germany, Spain, Morocco, Jordan, Algeria and from Tunisia participated physically in the workshop. Some participants from Greece and Ethiopia participated virtually. Most of the presentations were from results of ZeroParasitic project presented by the different partners of the project. In addition, others Tunisian researchers presented their work on parasitic plants according to a defined program and sessions. Around 70 participants attended the workshop. Questions and short discussion after each presentation were allowed for a better understanding of each work. ZeroParasitic consortium and some participants had also the opportunity on 16th of March to visit Beja Research Station and a farmer faba bean field infested by *Orobanche foetida* to have an idea on the progress achieved to tackle this problem. Participants visited a private seed company engaged in seed production of INRAT varieties partially resistant to orobanche.


PRIMA

Book of Abstracts

Scientific Workshop on Parasitic Plants *Orobanche/Phelipanche* spp.

ZEROPARASITIC

Organised by ZeroParasitic Project

Tunis (INRAT), 14- 16 March 2023

Edited by Mohamed Kharrat & Dimosthenis Chachalis


Opening ceremony of International Scientific Workshop of Parasitic Plants *Orobanche/Phelipanche* spp. (March 14th 2023)


Group photo of the participants in the workshop

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Tuesday 14 March 2023 – Session 1




Session 1: Progress in Exploring Resistance Mechanisms to Parasitic Weeds

- **Communication 1 :** Different broomrape species discrimination by HRM analysis and host (tomato) differential gene expression of parasite responsive genes. M. Gerakari, I. Fotou1, I. Naoumis, V. Kotsira, S. Tastsoglou, D. Chachalis, A. G. Hatzigeorgiou, A. Kapazoglou, E. Tani. by **Agricultural University of Athens (AUA)**, **Greece**.
- **Communication 2 :** Solanum biodiversity for providing broomrape resistance in tomato and the underlying plant-parasite molecular communication. Purificación Andrea Martínez-Melgarejo, Maialen Ormazabal, Cristina Martínez-Andújar, Francisco Pérez Alfocea. by **(CEBAS-CSIC**, **Murcia), Spain**.
- **Communication 3 :** Phenotypic partial resistance screening to broomrape of chickpea (*Cicer arietinum* L.) collection in Tunisia. Mustapha Rouissi, Khalil Khamassi, Ghassen Abid, Mahmoud Mhamdi. by **INRAT**, **Tunisia**.
- **Communication 4:** Prospection of some resistance mechanisms to *Orobanche foetida* and *O. crenata* in faba Tunisian varieties and breeding lines. Imen Trabelsi, Zouhaier Abbes, Moez Amri, Mohamed Kharrat. by **INRAT**, **Tunisia**.

Finally, the audience discussed the four communications

Tuesday 14 March 2023 – Session 2



Session 2 : Progress in Breeding for Resistance to *Orobanche* spp. and *Phelipanche* spp.

- **Communication 1 :** Breeding for resistance to Orobanche spp. in faba bean (*Vicia faba* L.) in Tunisia: More than thirty years' experience of an active research program in the Mediterranean region. Mohamed Kharrat, Moez Amri, Khalil Khamassi, Zouhaier Abbes, Imen Trabelsi, Laila Dakhli, Hamadi Ben Salah. by **INRAT**, **Tunisia**.
- **Communication 2 :** Faba bean breeding for tolerance to broomrape. L. Ghaouti, Z. Forahi, R. Mentag. by **IAV**, **Morocco.**
- **Communication 3 :** Molecular defence triggers of *Phelipanche* and their recognition by tomato receptors. Mouna Khalloufi, Anna Kudra, Isabell Albert, Markus Albert. by **FAU Erlangen-Nürnberg**, **Germany**
- **Communication 4 :** Field screening and management of 12 tomato land races for detection of resistance to *Orobanche.* Adel Alabed, Nizar Haddad, Khalid Anu Laila, Masnat Alkhiary. by **(NARC)**. **Jordan**.
- **Communication 5 :** Response of some Tunisian sunflower (*Helianthus annuus* L.) accessions to *Orobanche Cumana* Wallr. Parasitism. Taoufik Hosni, Zouhaier Abbes, Leila Abaza, Sana Medimagh, Hamadi Ben Salah, Mohamed Kharrat. by **INRAT**, **Tunisia**.

Finally, the audience discussed the five communications

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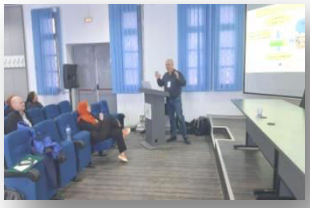
Wednesday 15 March 2023 – Session 3

Session 3 : Parasitic Weed Management and IPM Approaches to Combat Parasitism

- **Communication 1 :** Approaches to reduce parasitism by the broomrape, *Orobanche crenata* Forsk in faba bean (*Vicia faba* L.) fields. E. M. H. Hegazi, W. E. Khafagi, Manal A. Attia, A. Abou Zeid, M. A. El Eryan, Nagat M. Aly, Safaa M. Abd El-Rahman, A. K. Mahmoud, H. K. Abou Taleb, Amany M. Abu Shall, Mervat A. Hasaneen, Sania F. Showiel. by **AU, Egypt.**
- **Communication 2 :** Utilising stimulants and biocontrol agents to manage broomrape parasitism. Dimosthenis Chachalis, Anastasia Tsekoura, Aggeliki kousta, Dimitrios Argyris. by **BPI, Greece.**
- **Communication 3 :** Control of *Orobanche foetida* in faba bean (*Vicia faba*). Amal Bouallegue, Siwar Thebti, Zouhaier Abbes, Hadhami Abidli, Imen Trabelsi, Moez Amri, Mohamed Kharrat. by **INRAT, Tunisia.**
- **Communication 4 :** Over a decade of research on biocontrol of broomrape in Tunisia and Algeria: achievements and prospects. Nadjia Zermane, M.eriemBoutiti, Thouraya Souissi. by **INAT, Tunisia**.
- **Communication 5 :** Status and management of parasitic weeds of food legumes in the highlands of Ethiopia Seid Ahmed, Admassie Kassa, Banatlem Zeleke, Cherinet Alem. by Breeding Team, **ICARDA, INRA Rabat, Morocco**.
- **Communication 6** : New insights into the cardiopreventive activities of two parasitic plants: Orobanche and Cuscuta. Arij Bédoui, Hanen Baccari, Anouar Feriani, Moez Amri, Mohamed Ali Borgi, Mohamed Kharrat, Zouhaier Abbes, by **FSG, Tunisia**

Finally, the audience discussed the five communications







Wednesday 15 March 2023 – Session 4

Session 4: Progress in Exploring Resistance Mechanisms to Parasitic Weeds

- **Communication 1 :** Genetic diversity and population structure of *Orobanche spp*. et *Phelipanche spp*. from Tunisia. Khalil Khamassi, Zouhaier Abbes, Mustapha Rouissi, Eleni Tani, Anastasios Katsileros, Mohamed Kharrat. by **INRAT**, **Tunisia**.
- **Communication 2 :** Local sensing technologies (UAVs) to study broomrape parasitism in industrial tomato. Anatonis Kavvadias, Aggeliki Kousta, Anastasia Tsekoura, Dimitris Argyris, Dimosthenis Chachalis. by **BPI, Greece**.
- **Communication 3 :** Studies on *Orobanche foetida* in the genomic era in Tunisia: Status and perspectives. Amal Boukteb, Mohamed Kharrat, Mariem Bouhadida, By **INRAT**, **Tunisia**.
- **Communication 4 :** Remote sensing/GIS methodologies to map broomrape parasitism in industrial tomato. Dimitra Zermasli, Thanasis Zisos, Markos Bonazountas, Antonis Kavvadias, Aggeliki Kousta, Dimosthenis Chachalis. by **BPI, Greece**.
- **Communication 5 :** Detection of the parasitic weed, *Phelipanche ramosa* in rapeseed fields in Tunisia. Sana Medimagh, Zouhaier Abbes, Myriam Chtourou, Taoufik Hosni, Khalil Khamassi, Mohamed Kharrat. by **INRAT**, **Tunisia**.

Finally, the audience discussed the five communications

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Wednesday 15 March 2023 – Session 5

Session 5 : Socio-Economic Impacts - Awareness Raising

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- **Communication 1 :** Analysing the economic and social sustainability of weed management: the case of *Orobanche* in industrial tomato in Greece Efstratios Michalis, Athanasios Ragko. by **Agricultural Economics Research Institute, Hellenic Agricultural Organization –DIMITRA, Greece.**
- **Communication 2 :** Factors influencing Tunisian farmers' decisions to adopt measures to fight against orobanche. Ahmed Yangui, Taheni Mlayeh, Zouhaier Abbes, Mohamed Kharrat. by **INRAT, Tunisia.**
- **Communication 3 :** Integrated control management of the parasitic weed orobanche (*Orobanche foetida*) on the faba bean (*Vicia faba*) in north of Tunisia. Walid Gharbi, Messad Khammassi, Haykel Chebbi. by **INGC Bousalem, Tunisia.**
- **Communication 4 :** Approaches for the adoption of good agricultural practices in field crops; case of Tunisia. Dorsaf Hlel, Radhouen Nciri, Mouhanned Jemli, Hayet Maaroufi. by **INGC Bousalem, Tunisia.**
- **Communication 5 :** Strategy to reduce the impact of Orobanche in Tunisia Salwa Benfredj, Mouna Mhafdhi, Kamel Khalifa, Mohamed Habib BenJamâa. by **General Directorate of Plant Health and Control of Agricultural Inputs, Tunis**, **Tunisia**.

Finally, the audience discussed the five communications

Thursday 16 March 2023 – Field visit

During the third day the participants had a field visit to Beja research station and on-farm field in Kasseb and Seed Production Company (SOSEM) located at Bousalem.

The last day was devoted exclusively to ZeroParasitic team.

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Participation of some members of ZeroParasitic in the ATSB Congress

Saturday 18 March 2023 – Sousse (Tunisia)

Dr. Dimosthenis Chachalis, Dr. Francisco Alfocea, Dr.

Purification Andrea Melagrejo, Dr. Khalil Khamassi , Dr. Zouhaier Abbes and Dr. Mohamed Kharrat participated in the International Congress of the Tunisian Association of Biological Sciences held in Sousse (TUNISIA).

Dr. Chachalis and Dr. Melagrejo presented on Saturday 18 March 2023, respectively the objective and the main results of the ZeroParasitic project and the progress achieved by the Spanish team in their research in a session co-chaired by Dr. Alfocea and Dr. Kharrat.

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