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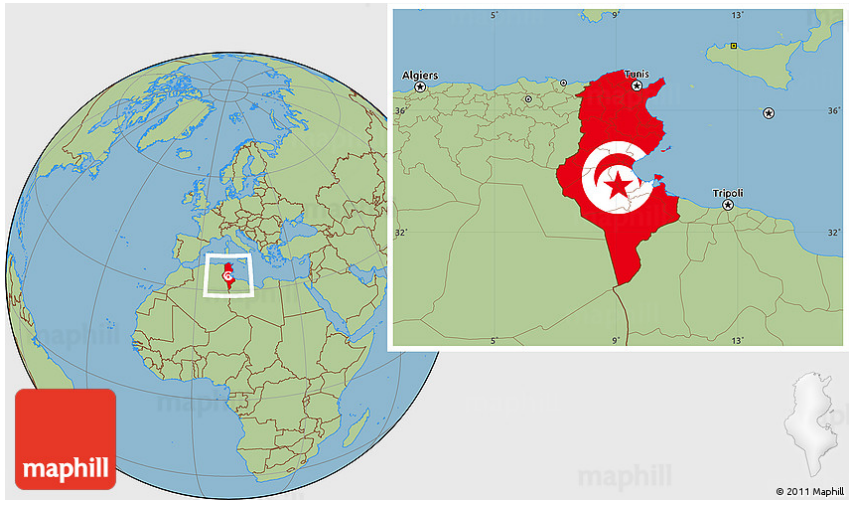
Plant Protection Laboratory

Presentation of Partners
INRAT

CURE-XF Kick-off Meeting
CIHEAM Bari 28-29 September, 2017



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Institut National de la Recherche Agronomique de Tunisie

➢ short description

Research Institute created in 1913.

➢ location (s)

Tunis, with 7 laboratories (Plant Protection, Agronomy, Horticulture, rural economy, Animals & forage, Vegetable, biotechnology) and 6 experimental fields (Kef, Mornag, Bourabiaa, El Kobba, Teboulba, Oueslatia)

➢ staff number

81 researchers and 35 technicians, 10 persons in administration, 131 workers

➢ Main activities

Conservation of genetic ressources, creation of new varieties, IPM, publication, supervision of students, ...

Plant Protection Laboratory

STAFF

Virology

JAMMALI Ahmed

NAJAR Asma

MAHFOUDHI Naïma

ZARROUK Fatma

Fungi

ALLAGUI Med Béchir

REZGUI Salah

GARGOURI Samia

BOUDABBOUS Sonia

Entomology

DHOUIBI Med Habib

BOUHACHEM Sonia

CHAIEB Ikbal

SOLTANI Rasmi

RABHA Souissi

18 PhD students

15 Master students

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➢ Main activities on *Xylella fastidiosa*

➢ Projects

No before

➢ Research activities

RESEARCH ACTIVITIES

- Detection and diagnosis of emergent plant pathogens and insects under climatic changes

- Survey and biogeography of plant pathogens and insects

-Soil borne and air borne fungi/cereals; aphids, viruses/potato, field crop, grape vine, citrus, stone fruit…

- Development of diagnostic tools

-BYDV, CpCSV, BLRV, FBNYV/legumes

- Population dynamics and epidemiology of diseases

-Aphids/potato/PVY, field crops; leafhoppers/fruit crops; BYDV/barley and BLRV, FBNYV/legumes; Fusarium, rusts, powdery mildew/cereals

- Ecology, Biology, and population structure
- Fusarium/cereals, aphids/potato, peach trees

RESEARCH ACTIVITIES

- **Screening and identification of resistance sources**

Aphids/field crops; BYDV/barley; BLRV/legumes, Soil borne, air borne fungi/cereals

- **Cultural techniques (rotations, sowing dates…) for disease management**

Soil borne, air borne fungi/cereals

- **Disease dynamics in the transition from conventional tillage to direct-seeding**

Soil borne fungi/cereals

- **Sanitary selection of virus-free mother bocks**

Grapevine, stone and pome fruits, citrus and olive trees

- **Alternative methods including the use of essential oil, mineral oils and parasitoids in the management of pathogens and insects**

Aphids/potato, aphids/Faba bean, mealybugs/grapevine…

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Résultats & Discussion

Identification of 30 species of Hemiptera :

- 25 cicadomorpha : *Empoasca vitis* (85%), *Macrosteles, Circulifer, Orosius*…
- 1 Aphrophoridae: *Philaenus spumarius*
- 5 fulgoromorphes : *Hyalesthes obsoletus*…

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Leafhoppers in Tunisia

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Tableau I.
Espèces de cicadelles identifiées au cours de prospections effectuées dans différentes régions de Tunisie, mentionnées avec leur lieu de capture.

Sous-famille	Genre et espèce	Lieu de capture
a) Famille des Cicadellidae		
Agalliinae	*Austroagallia sinuata* (M. et R., 1855)	Fahs
	Anaceratagallia laevis (Zachvatkin, 1946)	Bousalem
Deltocephalinae	*Balclutha punctata* (F., 1775)	Bizerte, Fahs, Hammamet
	B. saltuella (KBM,1868)	El Alia
	Chiasmus sp. (Muslant & Rey, 1855)	Fahs
	Cicadulina bipunctella (Mats., 1908)	Alya, Hammamet, Sidi Rais
	Circulifer haematoceps (Mulsant & Rey, 1855)	Bizerte, Bousalem, Fahs Hammamet, Sidi Rais, Wechtata
	Circulifer opacipennis (Lethierry, 1876)	Carthage, Chott Meriem, Echraaf, Gabes, Hammamet Nord, Mahdia, Oued Smir, Rafraf, Salloum
	Circulifer tenellus (Baker,1896)	Bousalem
	Euscelis incisus (Kirschbaum, 1858)	Fahs
	Exitianus capicola (ST., 1855)	Bousalem, Fahs, Hammamet
	Maziripius zizyphi (Bergevin, 1922)	Tuburro Majus
	Neoaliturus fenestratus (H.-S., 1834)	Bizerte, Bousalem
	Opsius lethierryi (Wagner,1942)	Gobba
	Orosius orientalis	Hammamet
	Phepsius sp. (Fieber, 1866)	Bousalem
	Psammotettix alienus (Dahlbom, 1850)	Fahs
Typhlocybinae	*Empoasca* sp. (Walsh,1862)	Bousalem, Bizerte, Fahs, Hammamet, Sbikha
	Eupterix sp. (Curtis, 1833)	Fahs
	Hauptidia marocana (Melichar, 1907)	Gobba
	Liguropia juniperi (Leth., 1876)	Gobba
b) Famille des Delphacidae		
	Laodelphax striatellus (Fennah, 1963)	Fahs, Hammamet, Tekelsa
	Sogatella vibix (Haupt, 1927)	Hammamet
	Toya propinqua (Fieber, 1866)	Hammamet

1998

+

Agallia leda
Austroagallia avicula
Chiasmus translucidus
Eucelidius variegatus
Goniagnatus guttulinervis
Macrosteles sp.
Psamottetix striatus
Recilia horvati
Thamnotettix sp.
Empoasca decedens
Zyginidia scutellaris
Zyginidia flamigera
Hyalesthes obsoletus
Pentastiridius suezensis
Philaenus spumarius

2007

Leafhoppers on vinyard fields

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Empoasca vitis (grillure)

Circulifer haematoceps
(Aster Yellows)

Hyalesthes obsoletus
(Bois noir)

Macrosteles variegata
(Aster yellows)

Orosius orientalis
(Stolbur)

leafhopper attacks

Etudes des cicadelles

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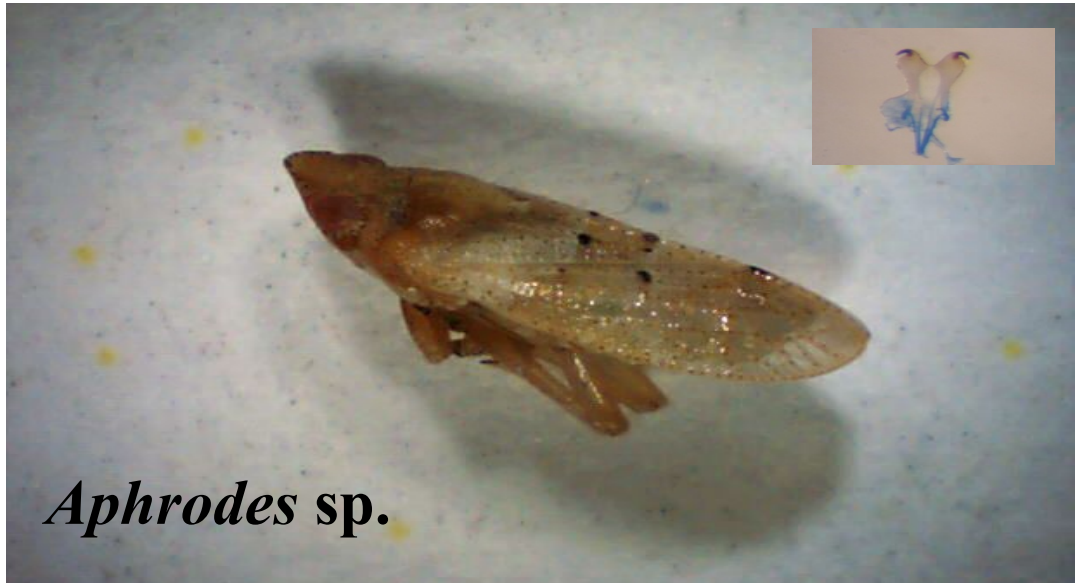
leafhoppers

Population dynamic

weeds

leafhoppers

Eupteryx decemenotata



Aphrodes sp.

Leafhoppers

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➢ Publications on leafhoppers

- Chaieb, S. Bouhachem-Boukhris, B. Nusillard, 2013. Eupteryx decemnotata Rey.: a new pest for aromatic plants in Tunisia. Acta Hortic. 997, 215-218. DOI:10.17660/ActaHortic.2013.997.26.
- Chaieb I., Boukhris-Bouhachem S., 2012. Some observations on leafhoppers on peach orchards in northern Tunisia. Journal of Entomology, 9(2): 123-129.
- Chaieb I., Boukhris-Bouhachem S., Nusillard B., 2011. Asymmetrasca decedens Paoli and *Zygina flammigera* Fourcroy (Hemiptera: Typhlocibinae), new pests in peach and almond orchards in Tunisia. Pest Technology, Global Science Books.
- Boukhris-Bouhachem S., Chabbouh N., Harbi M., Danet J.L. 2007. Les cicadiaires vecteurs potentiels de phytopathogènes en vignoble tunisien (Hemiptera : Cicadomorpha : Fulgoromorpha. Annales de la Société Entomologique de France, 43 (2) : 159-163.
- Najar A., Bouhachem S., Danet J.L., Saillard C., Garnier M. et Bové J.M., 1998. Présence en Tunisie de Spiroplasma citri, l'agent causal de la maladie du Stubborn des agrumes et son vecteur, la cicadelle Circulifer haematoceps-Contamination de Circulifer opacipennis et de C. haematoceps par S. citri. Fruits 53 (6): 391-396.

SKILLS

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Expertise

Activities targeted scientific expertise of pathogens and pest problems in the field management

Vegetable obtaining

Identification of source of resistance to the barley virus, rust and aphid.

COLLABORATION

National Institutes

- National Institute of field crops (INGC)
- Natioanl Institute of Agronomy (INAT)
- School of Agriculture of El Kef (ESAK)
- Regional center of field crops research (CRRGC, Béja)
- Biotechnology Center of Borj Cedria (CBBC)
- Faculty of Science of Tunis (FST)
- National Development Centers: GIF, GOVPF, INGC, GIL, CTA, CTPT

International Institutes

- International Center for Agricultural Research in Dry Areas (ICARDA, Syria)
- Mediterranean Agronomic Institute of Bari (IAM, Italy)
- Institute of Agronomic Research of Valence (IVIA, Spain)
- National Institute of Agronomy, El Harrach (ENA, Algeria)
- Agronomic Research Center of Gembloux (CRAG, Belgium)
-National Institute of Agronomic Research (INRA, France)
-Internatioanl Center of Wheat and Maize Breeding (CIMMYT, Mexico)
-USDA-ARS, root disease and biological control unit, WSU, USA
- CSIC (Center of sustainable Agriculture Cordou)

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➢ Main facilities

- ➢ **Labs** Plant Protection Laboratory well equiped
- ➢ **Experimental fields** At INRAT and their experimental fields

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Thank you for your attention