# Assessing the resistance of potato cultivar Sarpo Mira to Algerian isolates of *Phytophthora infestans*

**Sihem BELKHITER [1], Zouaoui BOUZNAD [1], Abdelaziz KEDAD [1], Didier ANDRIVON [2], Roselyne CORBIERE [2]**

[1] ENSA - El Harrach - Algiers - ALGERIA - E mail : z.bouznad@ensa.dz
[2] INRA - UMR 1349 IGEPP - Le Rheu - FRANCE - E mail : Roselyne.Corbiere@rennes.inra.fr

Sarpo Mira cv. has been reported to retain foliar resistance to *Phythophora infestans* populations even under high blight pressure conditions, for several years.

This resistance could however be eroded when challenged with new *P. infestans* genotypes, because of the pathogen ability to rapidly adapt and evolve.

Within Algerian populations from Western and Central coastal regions, most *P. infestans* isolates had the A2 mating-type, predominantly genotype 13_A2 (EU_13), although A1 mating-type isolates are also present on potato and tomato crops.

This study aims to examine the resistance of Sarpo Mira under natural and controlled conditions to current Algerian isolates.

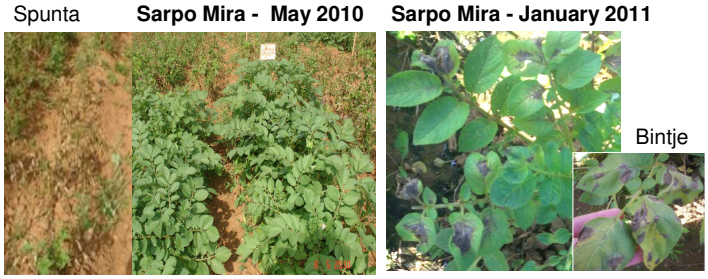
## Field resistance of Sarpo Mira cv. under natural blight infection in ENSA trials (Algiers)

**In 2010** :

- all cvs (Spunta, Bintje, Désirée, Atlas, Kondor…) : totally defoliated by 17 days from first observed symptoms.
- Sarpo Mira : no symptom, fully resistant.

**In 2011** :

- Sarpo Mira exhibited blight necrosis, but sporulation was more limited than on susceptible cvs, as Bintje.




## Differential responses of Sarpo Mira to Algerian *P. infestans* isolates under controlled assay

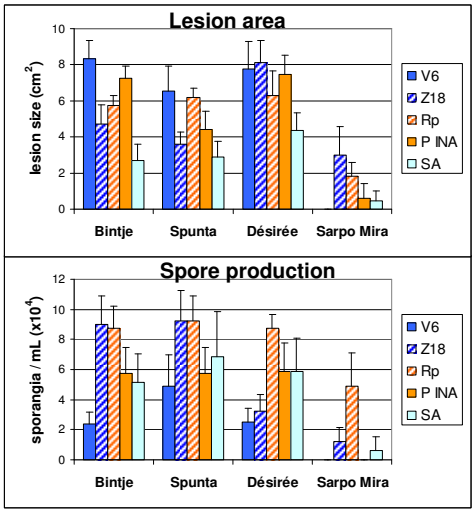
**5 potato isolates tested (3 A2, 2 A1)**

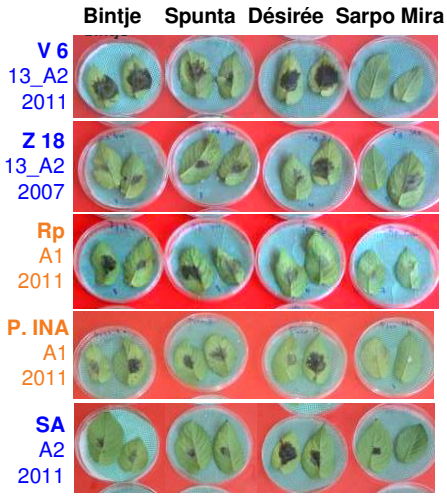
- **V6**, 13_A2 MLG, ENSA 2011, from Bintje
- **Z 18**, 13_A2, sampled in 2007 on Atlas
- **SA**, A2, ENSA 2011, sampled on Sarpo Mira
- **Rp**, A1, ENSA 2011, from Spunta
- **P. INA**, A1, ENSA 2011, from Timate, SSR MLG similar to tomato isolates MLGs (distinct from MLGs of potato isolates)

**on Sarpo Mira and 3 reference cvs**

8 leaflets / cv. inoculated with a 20-µL droplet ($5x10^4$ sp/mL); incubation at 20°C

- Lesion size measured at 6 dpi
- Spore production noticed at 7 dpi (each leaflet washed in 5 mL of water)




Sarpo Mira cv. showed a high level of resistance to three isolates (2 A2 and 1 A1) :

- V6 was not able to infect any Sarpo Mira leaflets.
- SA gave very small and limited sporulating lesions on Sarpo Mira.
- with P. INA, Sarpo Mira leaflets displayed small necrosis without sporulation, although this isolate was highly aggressive on the three susceptible cvs.

However, Sarpo Mira resistance was overcome by two isolates Z18 (A2) and Rp (A1) which had a great sporulation on the cultivar.

Different phenotypes were observed among the Algerian isolates. Aggressiveness of these isolates was not related to their mating-types, nor to SSR genotypes.

Large variations in pathogenic traits were noticed on each cultivar, according to the isolates.

The resistance of Sarpo Mira is due to at least five different genes (Rietman *et al.*, 2012). Our results show that variability exists within Algerian populations of *P. infestans* to this cultivar. Some isolates (like V6) are avirulent, while others, both from A1 and A2 mating types, are able to infect and sporulate on it, albeit with a low efficacy.

Therefore, if Sarpo Mira cv. currently retains a high level of resistance in Algeria, maximizing the potential durability of this resistance requires thorough monitoring of *P. infestans* populations, on both hosts potato and tomato, and a flexible deployment strategy.

*This work was supported by PoH-MED project (Potato Health – Managed for Efficiency and Durability) funded by ARIMNet (Agricultural Research in the Mediterranean Area). The authors are grateful to Younes MOULAI for field trials and Lyes BENINAL (Centre National de Contrôle et de Certification, Algiers) for providing us some Algerian isolates.*