

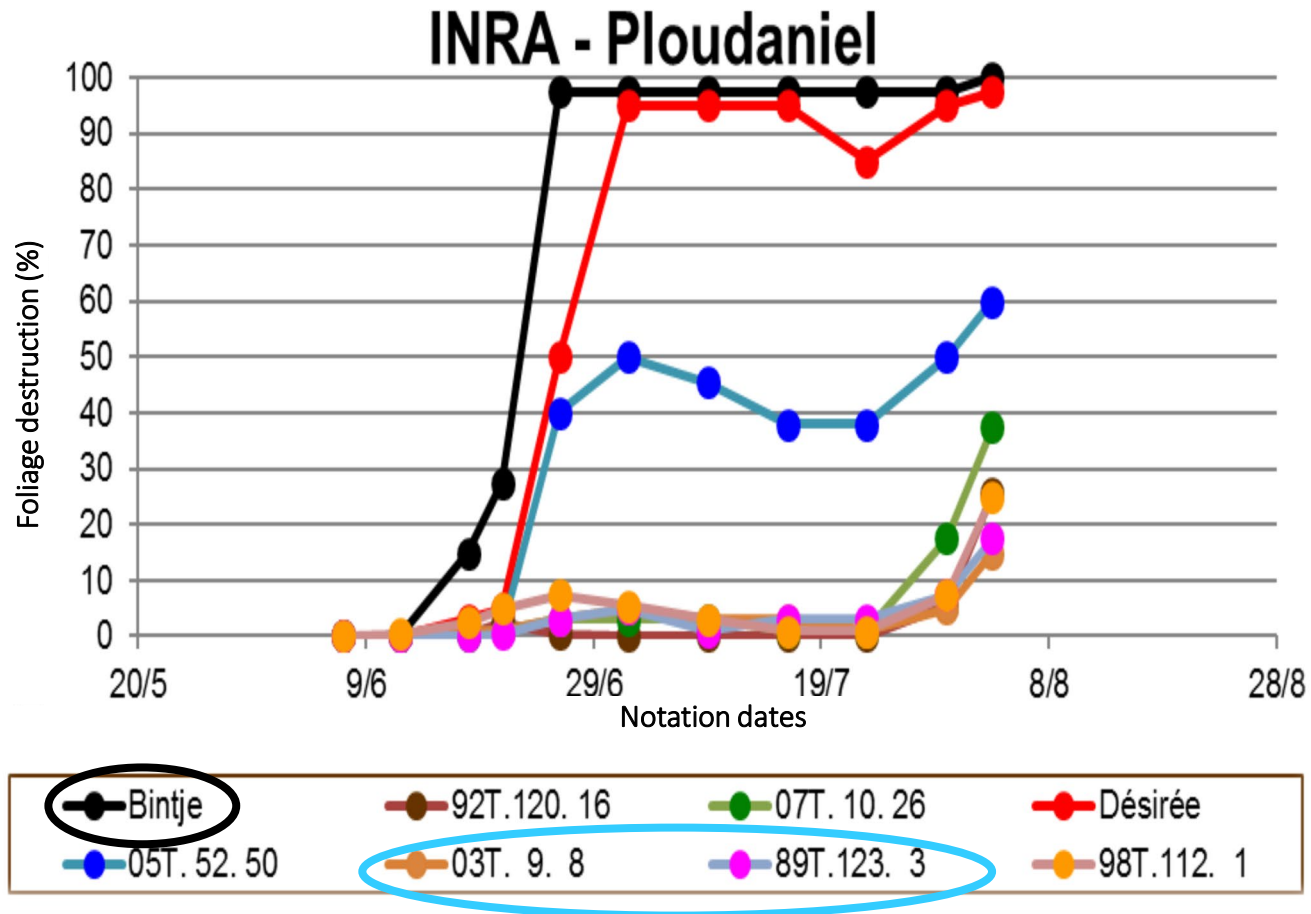


➤ *Phytophthora* clones and resistant cultivars : phenotypes and selection

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UMR IGEPP – Le Rheu - France

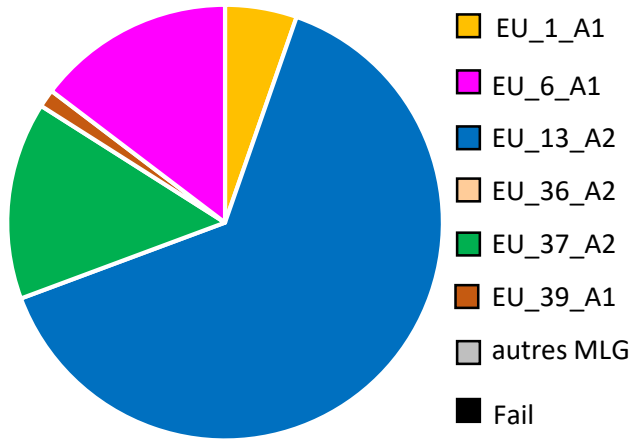
➤ Field behaviour of some resistant and susceptible accessions



➤ Population composition on susceptible and resistant cvs – France 2018

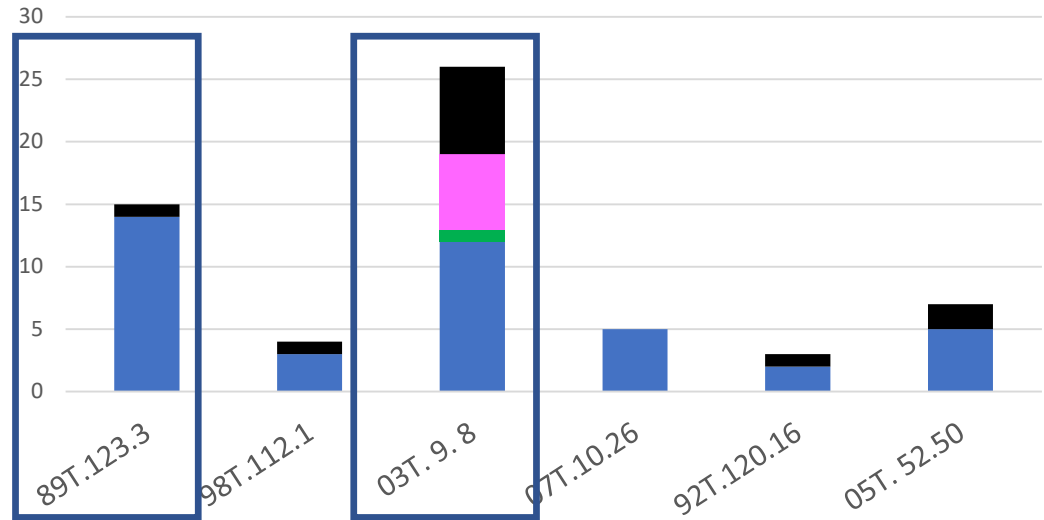
Population **on Bintje**

n=75



Population **on resistant genotypes**

n = 60

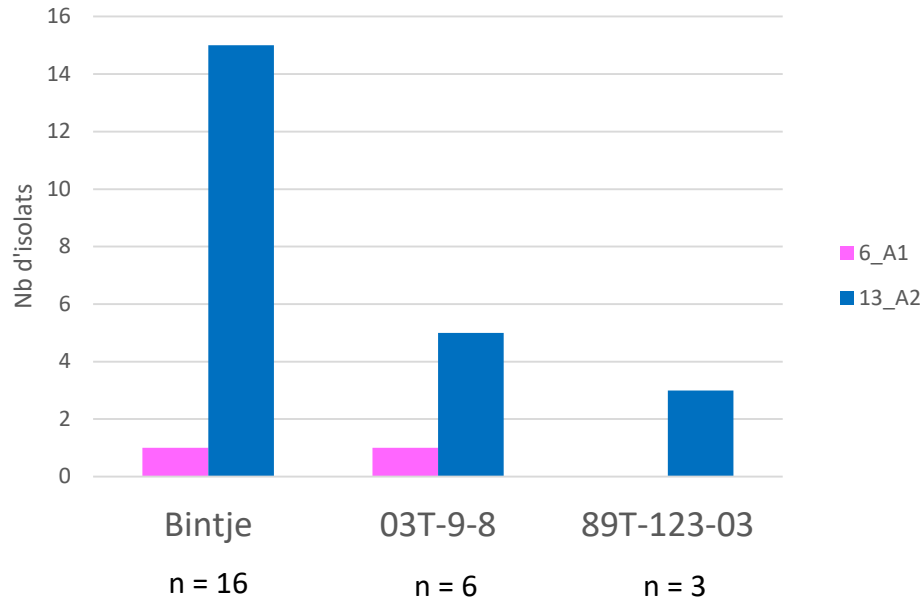


- Resistant genotypes exposed to all clonal lineages present in France : **13_A2**, **6_A1**, **1_A1**, **37_A2**
- **13_A2** : most or exclusively prevalent on the resistant genotypes,
- **37_A2** and **6_A1** also present on one resistant accession, at low frequencies

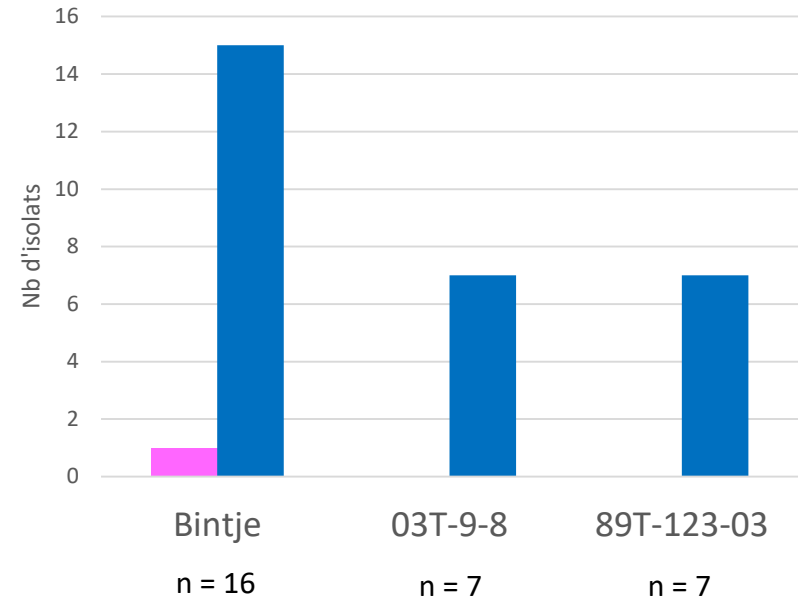


Population changes over an epidemic – Ploudaniel 2019

Early epidemic stage
04/07/2019



Later epidemic stage
18/07/2019



✓ 13_A2 prevails from the start

✓ 6_A1 present :

- ✓ on Bintje, at both dates, but low frequency re. 2017 & 2018 (50% early in the epidemic then)
- ✓ on 03T-9-8, in early epidemic only



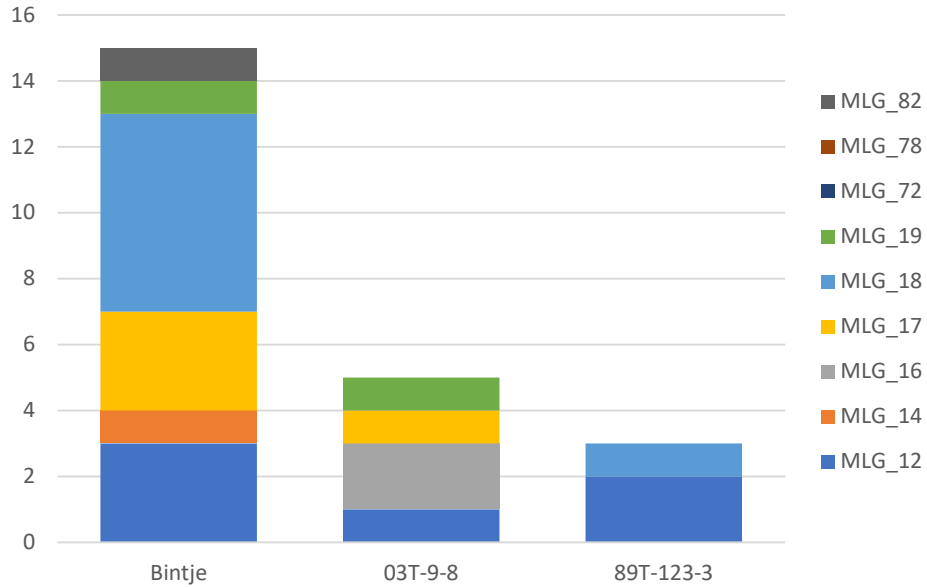
INRAE

*EuroBlight Zoom technical meeting 1
16 March 2021*

> Selection within EU_13_A2

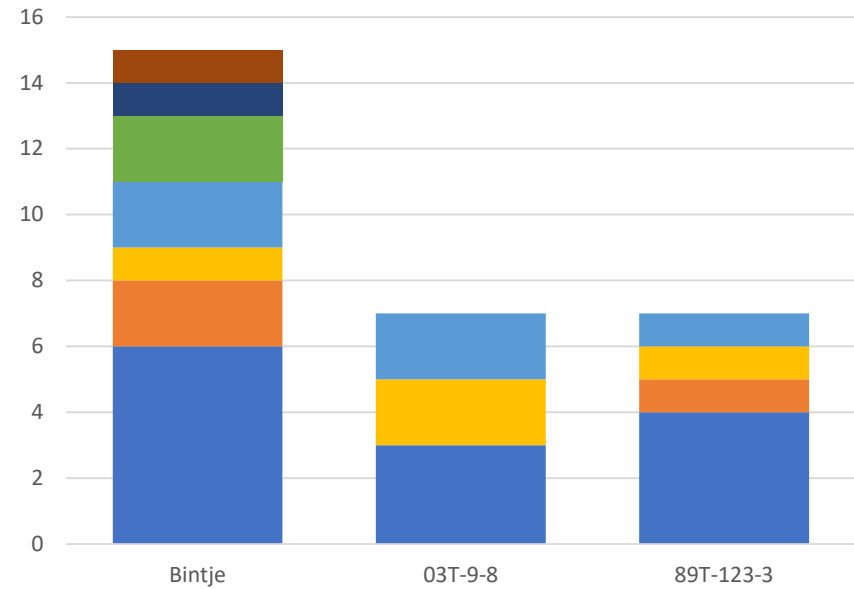
Early epidemic stage
04/07/2019

MLG within13_A2 according to host

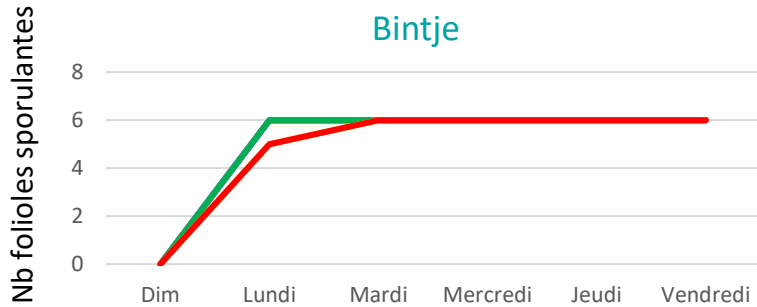


Later epidemic stage
18/07/2019

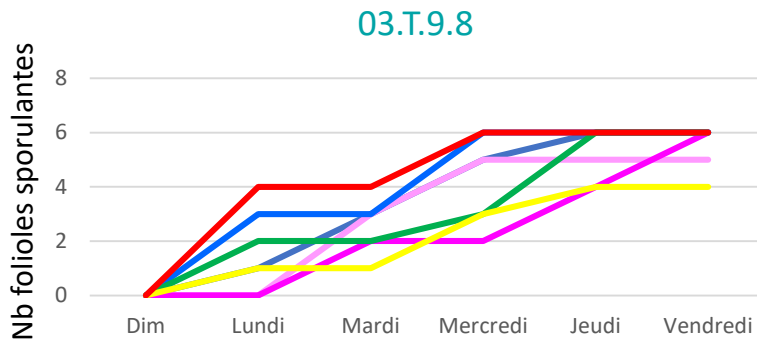
MLG within13_A2 according to host



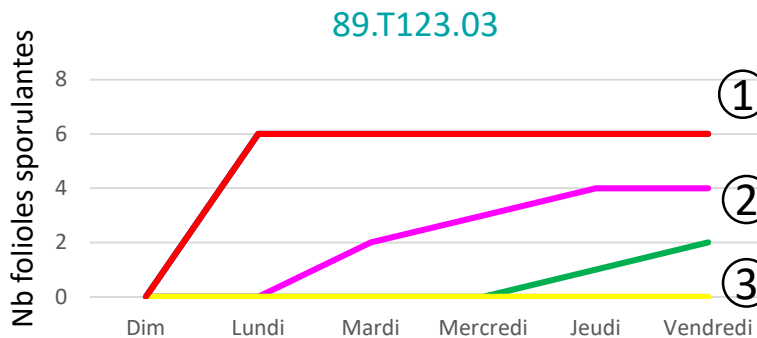
➤ Latent period



All clones behave the same



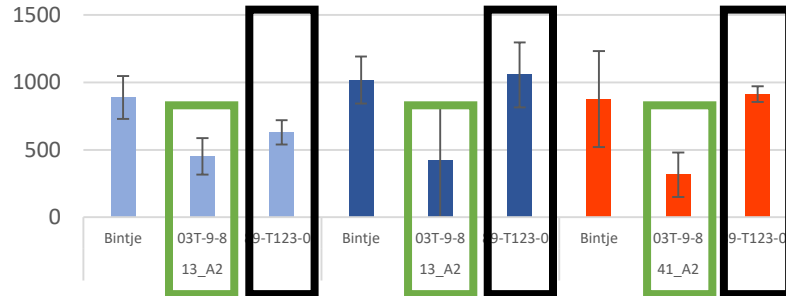
Delayed spore production in all lineages



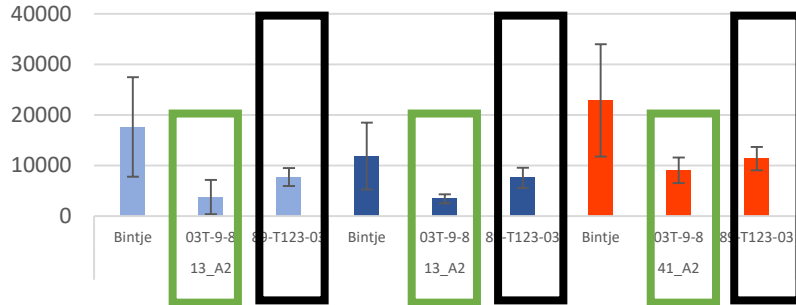
- ① Same latent period as in Bintje : **13_A2** & **41_A2**
- ② Strongly delayed sporulation : **6_A1** & **37_A2**
- ③ No sporulation after 7 days : **1_A1** et **36_A2**.

➤ Other aggressiveness LHT

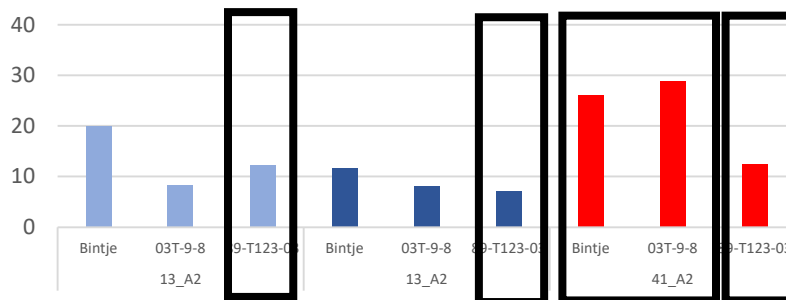
Mean lesion size 5 dai (mm²)



Spore production 5 dai (sporangia/mL)

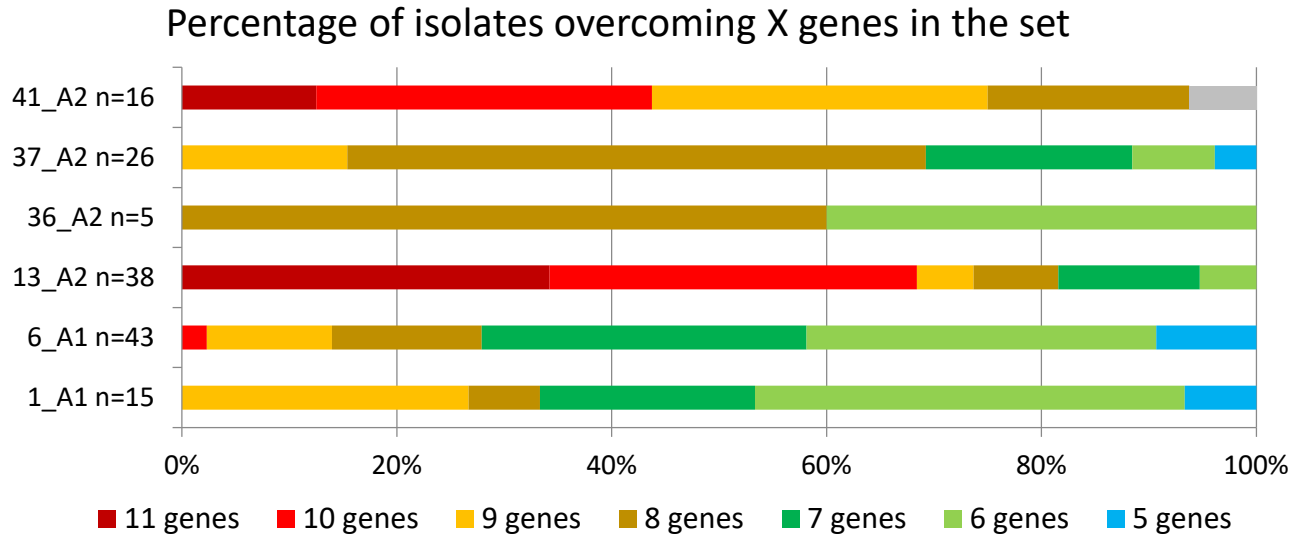


Sporulation capacity (sporangia/ mm²)



- ❖ **13_A2 (2 isolates) & 41_A2 (1 isolate) only ;**
- ❖ **03T-9-8 : warning : longer latent period on this genotype**
 - ✓ Lower lesion size
 - ✓ Lower spore production
- ❖ **89-T123-03 :**
 - ✓ Lesion size equivalent to that on Bintje
 - ✓ Reduced spore production
- ❖ **41_A2** may have a higher sporulation capacity than **13_A2** on 03T-9-8 & Bintje.

> Virulence of the various clonal lineages



Over 50% of isolates overcome:

- ✓ all 11 genes *R* : lineages 13_A2 & 41_A2;
- ✓ 8 genes *R* : lineages 6_A2 & 37_A2;
- ✓ 6 to 7 genes *R* : lineages 1_A1 & 6_A1

➤ Some conclusions

- **Different population structures on susceptible and resistant hosts:**
 - ✓ EU_13_A2 prevails on resistant hosts
 - ✓ More diverse populations on susceptible ones
 - ✓ Changes during the course of a single epidemic

- **Different host resistance types induce differences in population structures :**
 - ✓ Some hosts allow multiple genotypes, others not
 - ✓ Intra clonal selection of MLGs

- **Marked differences in clone behaviour on the various resistant hosts**
 - ✓ Latent period
 - ✓ Other aggressiveness traits (spor production, lesion size)

- **Practical consequences**
 - ✓ Population monitoring critical for cv choice
 - ✓ Needs to be coupled with accurate phenotyping
 - ✓ Strong selection effects >

