

ASSESSMENT OF DISEASES SUSCEPTIBILITY OF PEACH CULTIVARS IN EXPERIMENTAL PLOTS AND ON-FARM FOR ORGANIC AND LOW-INPUT SYSTEMS

BASELINE OF FRENCH CASE STUDIES

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“Which peach cultivars are relevant for planting in my organic orchards ?”

Despite a high turn-over of new peach cultivars, their suitability for organic and low-input systems remains unknown for most of them. Diseases susceptibility is an important criteria to consider since diseases control is a bottleneck to peach production in these systems.

Since 2001, 81 peach cultivars were assessed in 2 experimental sites and 7 on-farm plots

Experimental and on-farm networks set-up for the assessment of diseases susceptibility

Plot design	Management	Type of cultivars	Period	Nb of years	Nb of locations	Nb of cultivar	Nb of tree / cultivars	Susceptibility assessment
on farm	organic	patrimonial advanced selection	2002-2006	5	5	15	2	Leaf curl Powdery mildew
experimental plot	A organic	patrimonial advanced selection	2003-2008	5	7	28	1-2	Leaf curl Powdery mildew
experimental plot	B low input	modern cultivars	2009-2011	3	2	12	10	Leaf curl Powdery mildew
on farm	organic	patrimonial modern cultivars	2014 - on-going	2	2	25	12	Leaf curl Monilia spp.
on farm	C organic	patrimonial modern cultivars	2011 - 2015	5	2	18	3-5	Leaf curl Monilia spp.

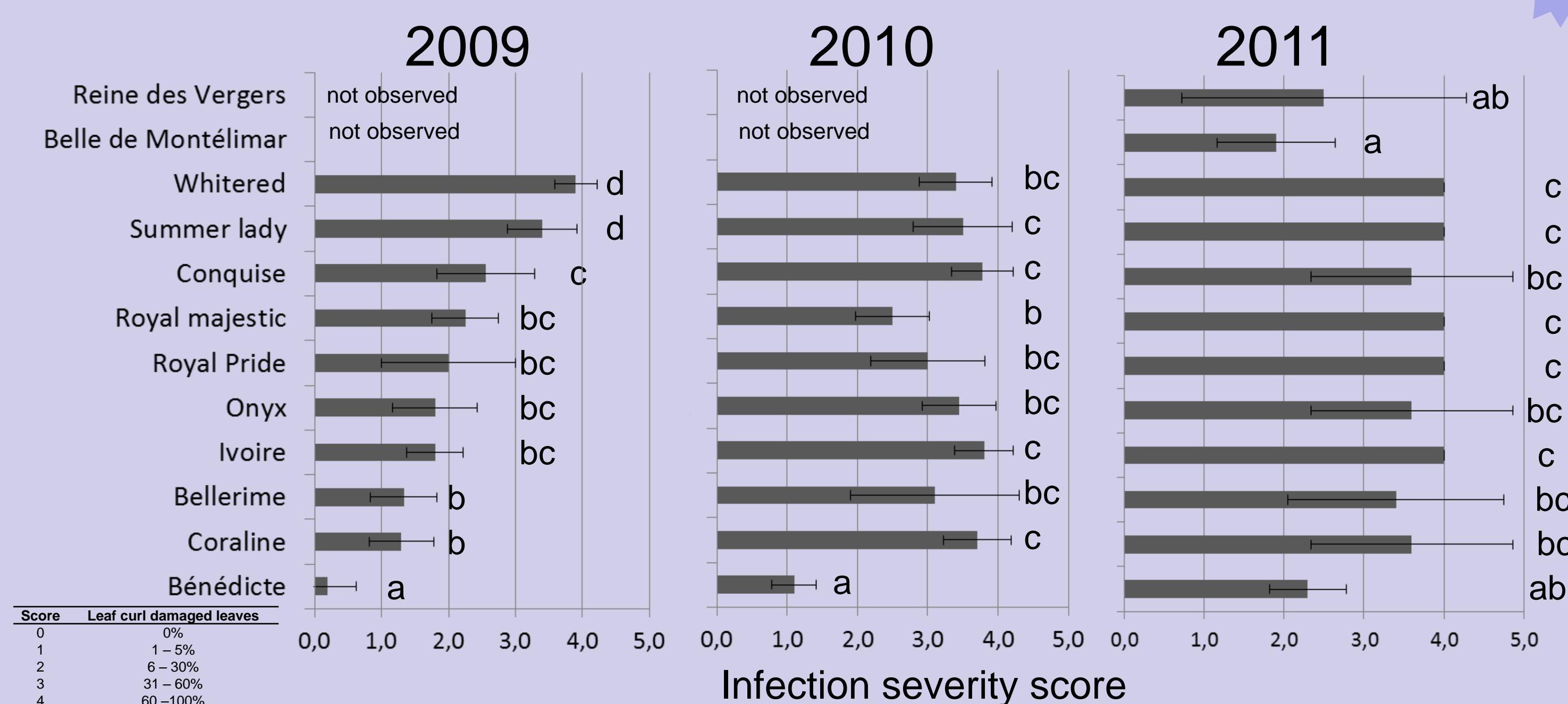
Screening trial in experimental randomized plot. Diseases susceptibility and fruit quality for some of the cultivars assessed at Gotheron site.

Cultivar	Harvest	Leaf curl	Powdery mildew	Fruit quality
Belle de Montélimar	29 Aug.	Low	High	8
Reine des Vergers	01 Sept.	Low	High	8
Mme Guilloux	28 Aug.	Low	High	6
GF 305	25 Aug.	Low	High	6
GF305-1 x S3928	25 Aug.	Low	High	6
(S3928 x GF305-1-2) ⁶	27 July	Intermediate	High	5
5745 ²	25 Aug.	Low	High	4
Surpasse Amsden	10 July	Low	High	5
Combet	02 Sept.	Low	High	8

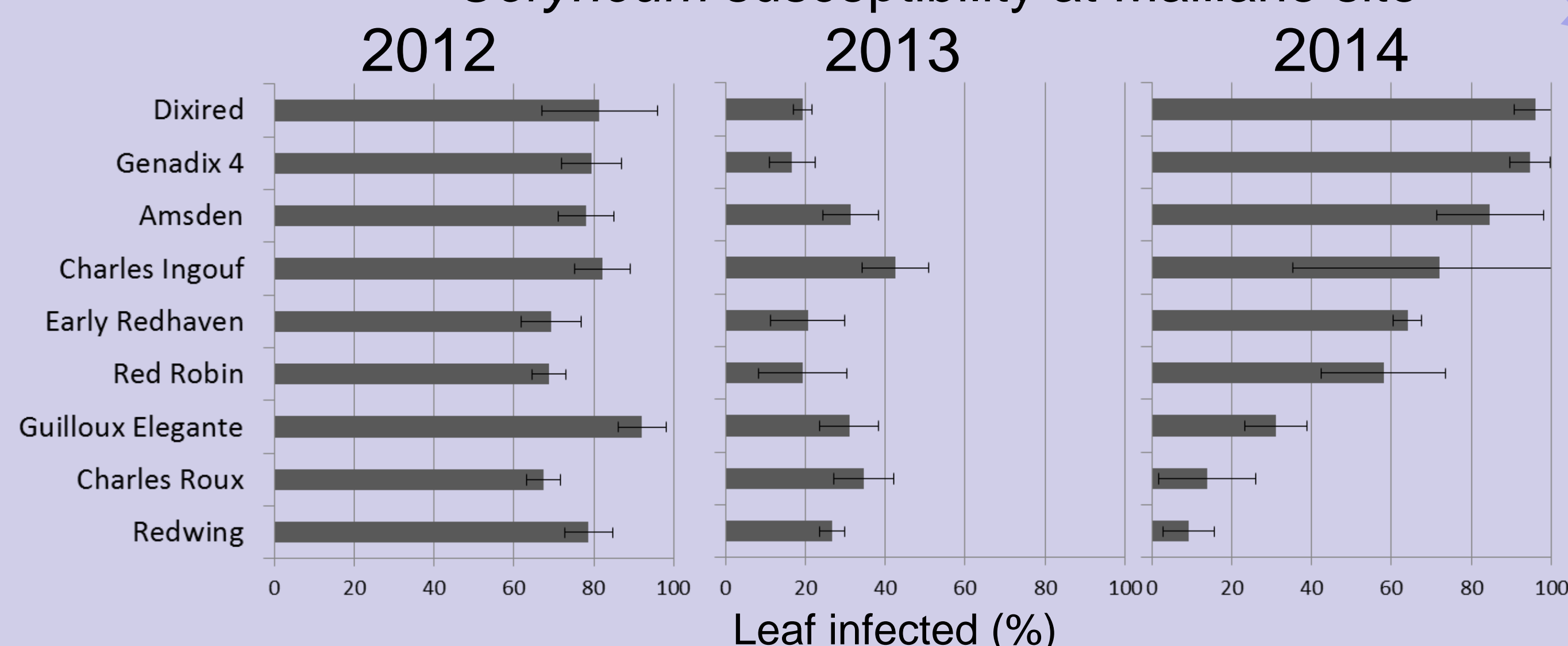
Disease susceptibility scale: low (green), intermediate (orange), high (red)
Fruit quality scale: 0: low quality to 10: high quality



Disease assessment in an experimental randomized plot. Leaf curl susceptibility at Gotheron site



On-farm disease assessment in an organic plot. Coryneum susceptibility at Maillane site



IN A NUTSHELL

- 💡 Disease susceptibility is the result of interactions between **Genotype x Environment x Management**. Quantifying and isolating the effect of the genotype factor is tricky.
- 💡 The effect of the year can be significant (see graphs beside).
→ Long-term and multi-site observations are useful to **integrate different level of infection conditions**, and thus to highlight susceptibility gradient.
- **Choosing a reference cultivar** is necessary to facilitate multi-site comparison.
- 💡 **Interactions between diseases**, such as leaf curl x powdery mildew, needs to be considered in assessment process.
- 💡 A methodology to merge the complementarity of the **richness of the farmers expertise** and the **accuracy of experimental observations** needs to be developed to enhance cultivar's assessment.