



Final technical meeting

9th September, 2014

Bilbao

WP 3.2.1 – Genetic control

Identifying *Eucalyptus* genetic materials less sensitive to *Gonipterus platensis*

Participants:

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Objectives:

Identify phenotypic variability among genotypes, clones and families regarding: i) susceptibility and ii) tolerance to *G. platensis* attack.

Susceptibility – inability of a plant to restrict the development of a specific pest that could affect their growth

Tolerance - Reflects the degree to which a plant can regrow and reproduce after damage from herbivores



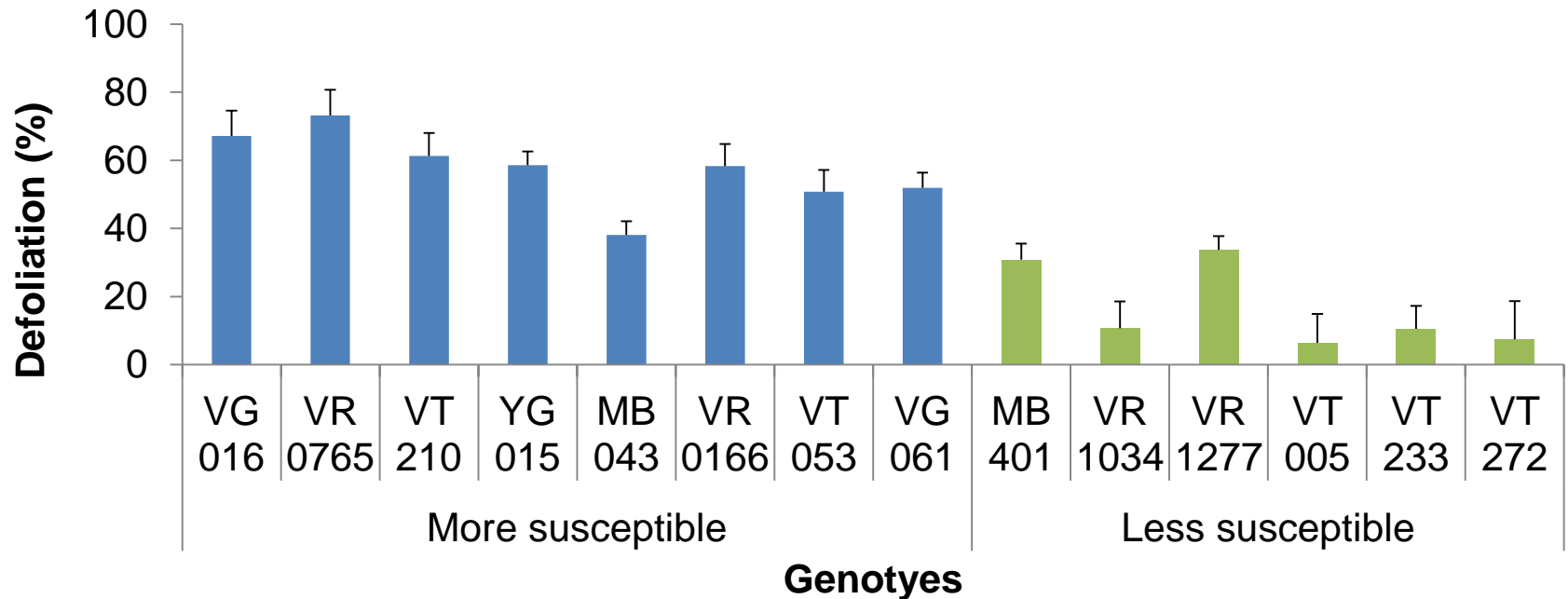
Previous data indicates:

- i) Genotypes that were more susceptible suffered more defoliation than genotypes less susceptible -> differences in SUSCEPTIBILITY

- ii) Few differences in height, DHB and Volume between more and less susceptible genotypes - > TOLERANCE

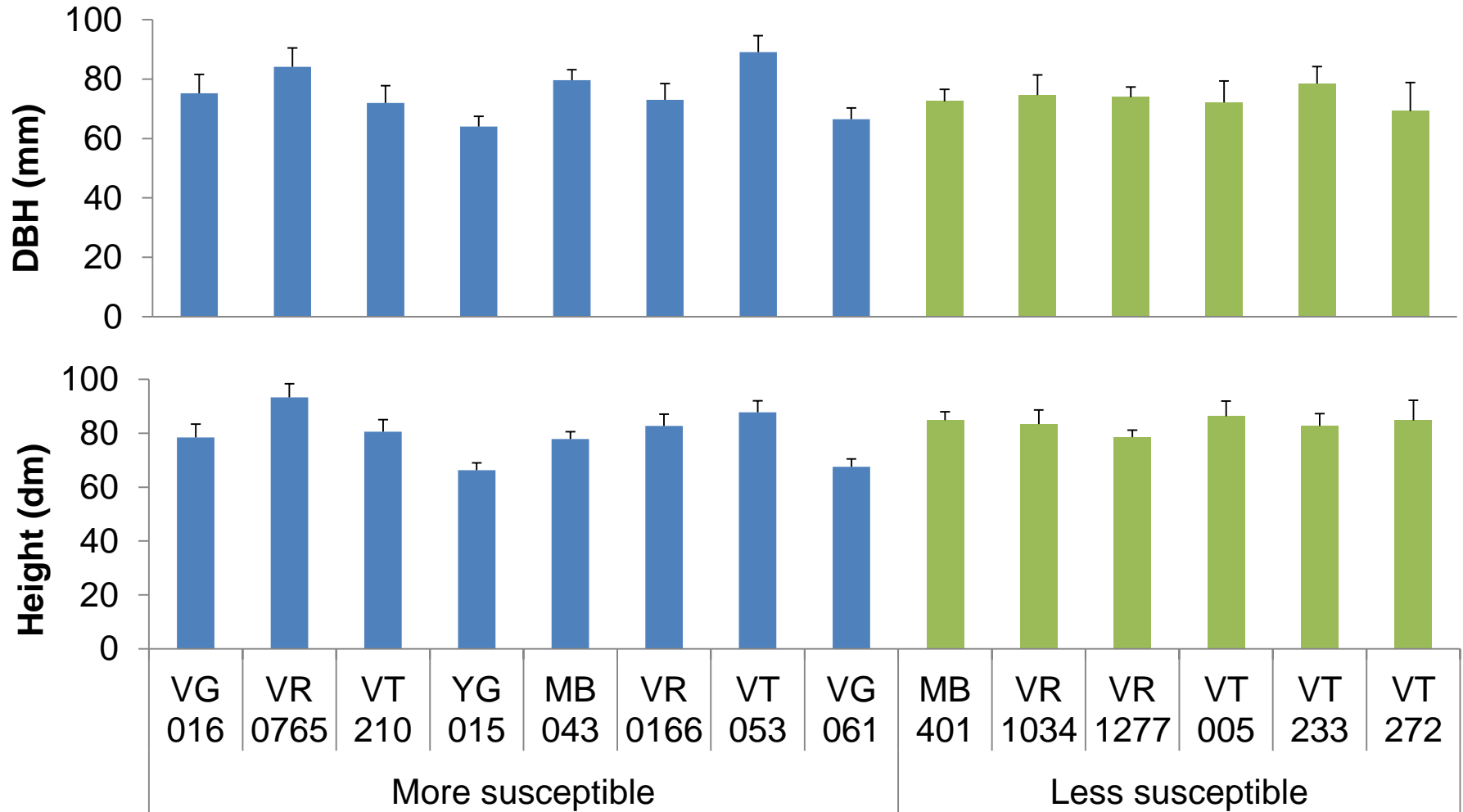


Previous data showed differences between genotypes in susceptibility to *G. platensis* expressed by the degree of defoliation



Data from 2007 and 2010 measurements. Defoliation obtained from sites, 2.8 and 3.3 years old

Yet, no differences in DBH and height between more and less susceptible genotypes were found





To confirm the previous results, additional data from 5 sites and 34 genotypes was analyzed

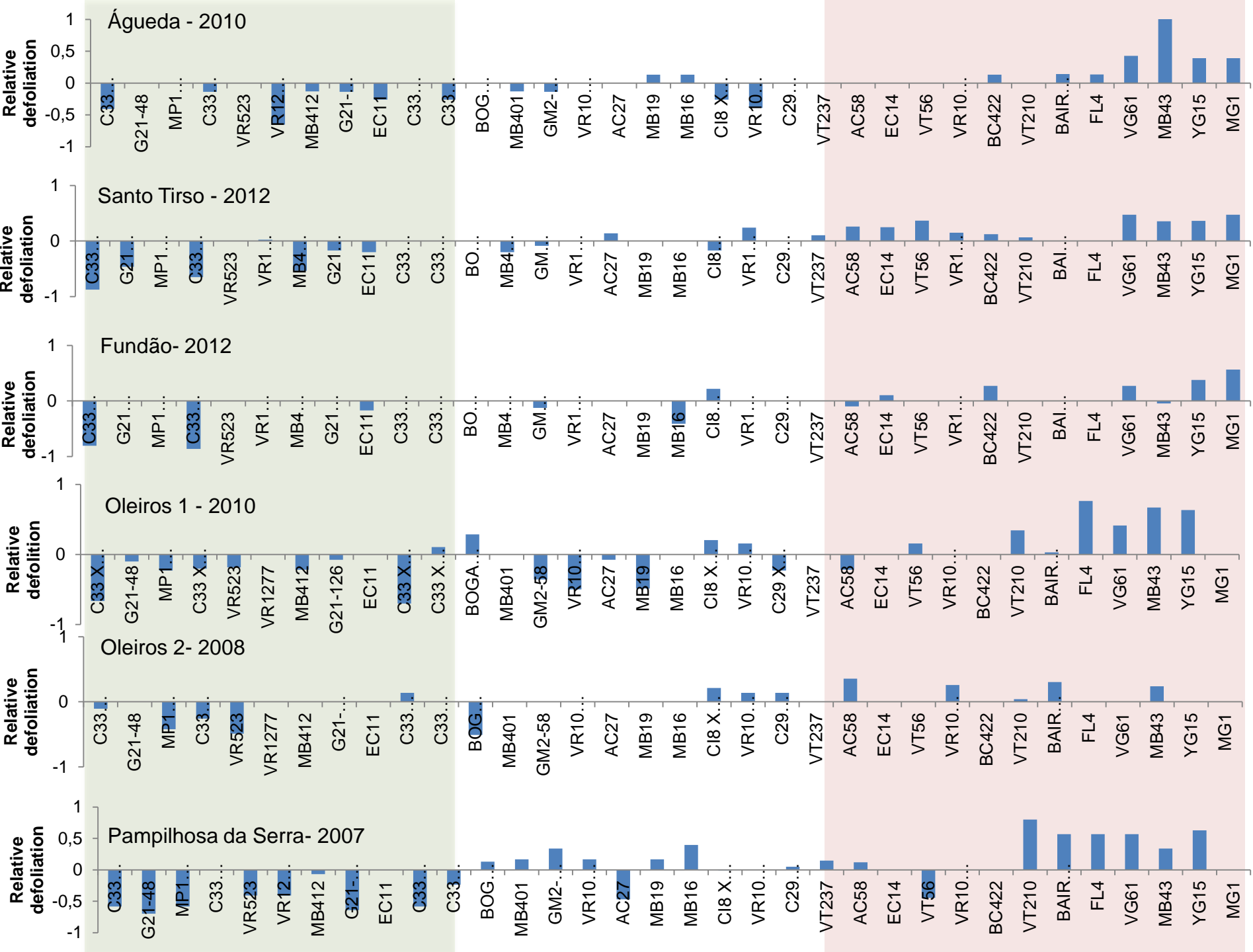
Genotypes	Águeda	Santo Tirso	Fundão	Oleiros 1	Oleiros 2	Pampilhosa Serra
C33 X VM14	x	x	x	x	x	x
G21-48		x			x	x
MP1 X VM14				x	x	x
C33 X C51	x	x	x	x	x	
VR523				x	x	x
VR1277	x	x				x
MB412	x	x			x	x
G21-126	x	x			x	x
EC11	x	x	x			
C33 X C29				x	x	x
C33 X C26	x				x	x
BOGALHEIRA		x		x	x	x
MB401	x	x				x
GM2-58	x	x	x		x	x
VR1061 X VR441	x				x	x
AC27	x	x			x	x
MB19	x				x	x
MB16	x		x			x
CI8 X C29	x	x	x	x	x	x
VR1061 X VR585	x	x		x	x	
C29 X C42				x	x	x
VT237	x	x		x		x
AC58	x	x	x	x	x	x
EC14	x	x	x			
VT56		x			x	x
VR1069 X VR444	x	x		x		
BC422	x	x	x			
VT210		x		x	x	x
BAIRROMIGUEL	x			x	x	x
FL4	x				x	x
VG61	x	x	x		x	x
MB43	x	x	x	x	x	x
YG15	x	x	x		x	x
MG1	x	x	x			



FORRISK

Susceptibility

**Evaluated by the degree of defoliation,
expressed by the standardized values in relation
to the estimated mean for each site**

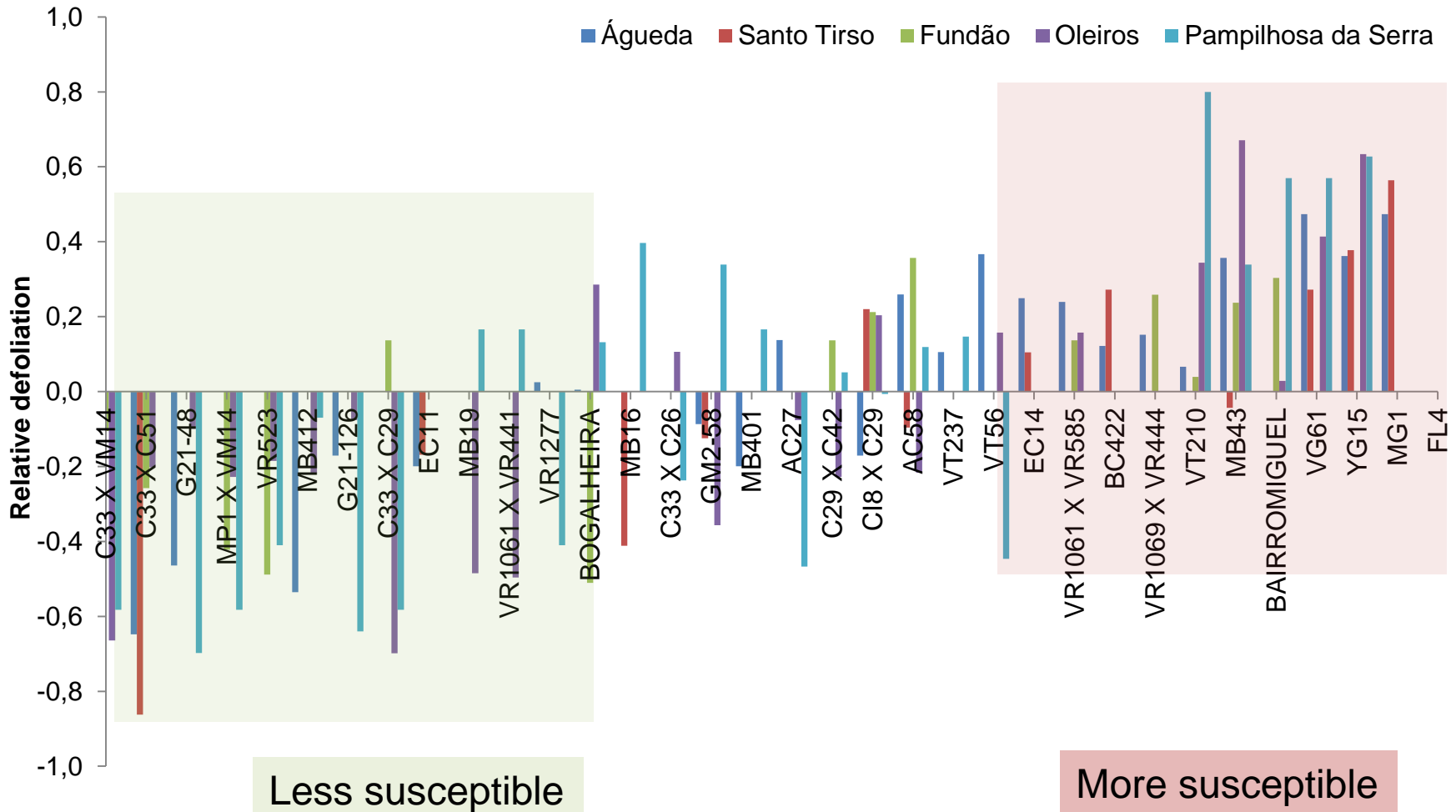




Significant variability on the susceptibility among genotypes - $F_{34,1072} = 1.374$; $p < 0.001$

No site effect - $F_{2,1072} = 6.053$; $p = 0.254$

No interaction effect - $F_{14,1072} = 2.097$; $p = 0.103$





Tolerance

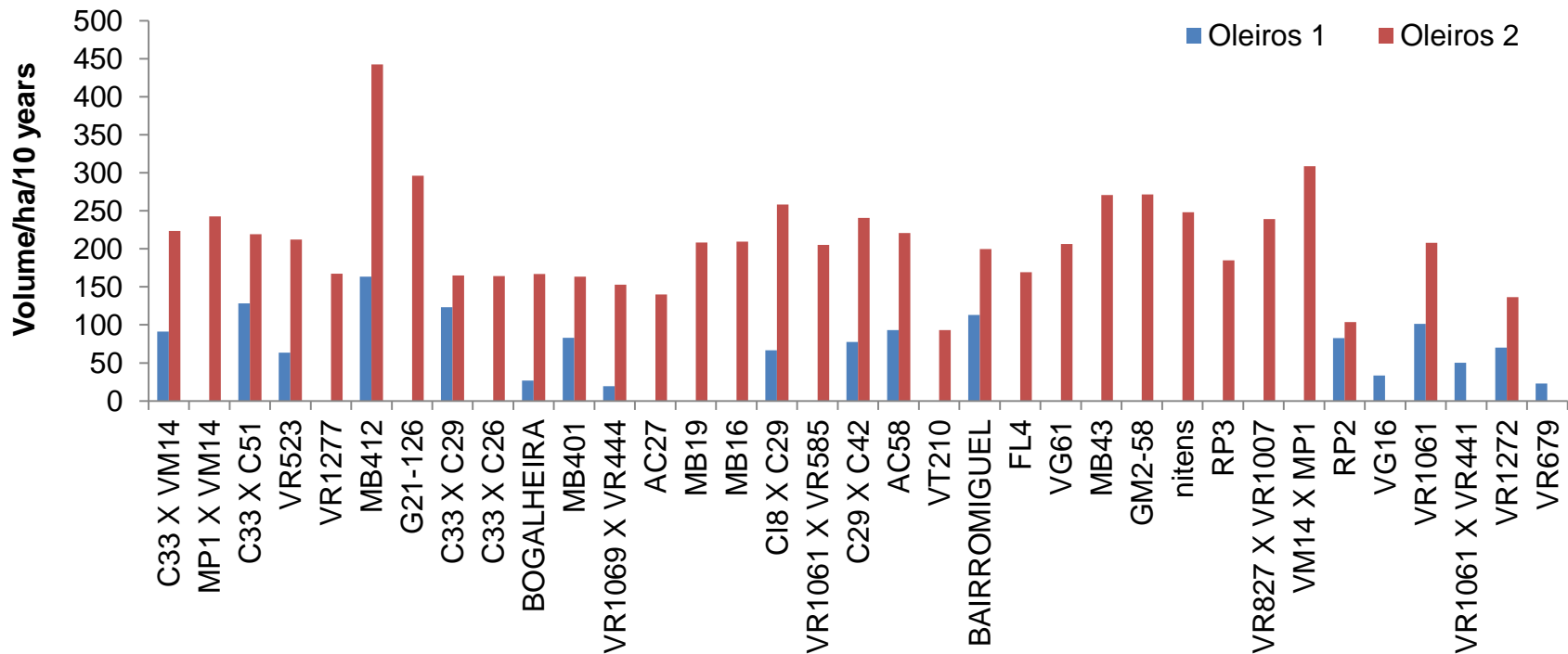
**Evaluated by tree growth (volume
estimated at 10 years)**



Two sites:

Oleiros 1 – 619 m; Site quality index - 17

Oleiros 2 – 801 m; Site quality index - 25.1



Oleiros 2 has higher volume/10 years than Oleiros 1 (SQI higher)

Oleiros 1

Relative defoliation

Susceptibility

High susceptible

Low susceptible

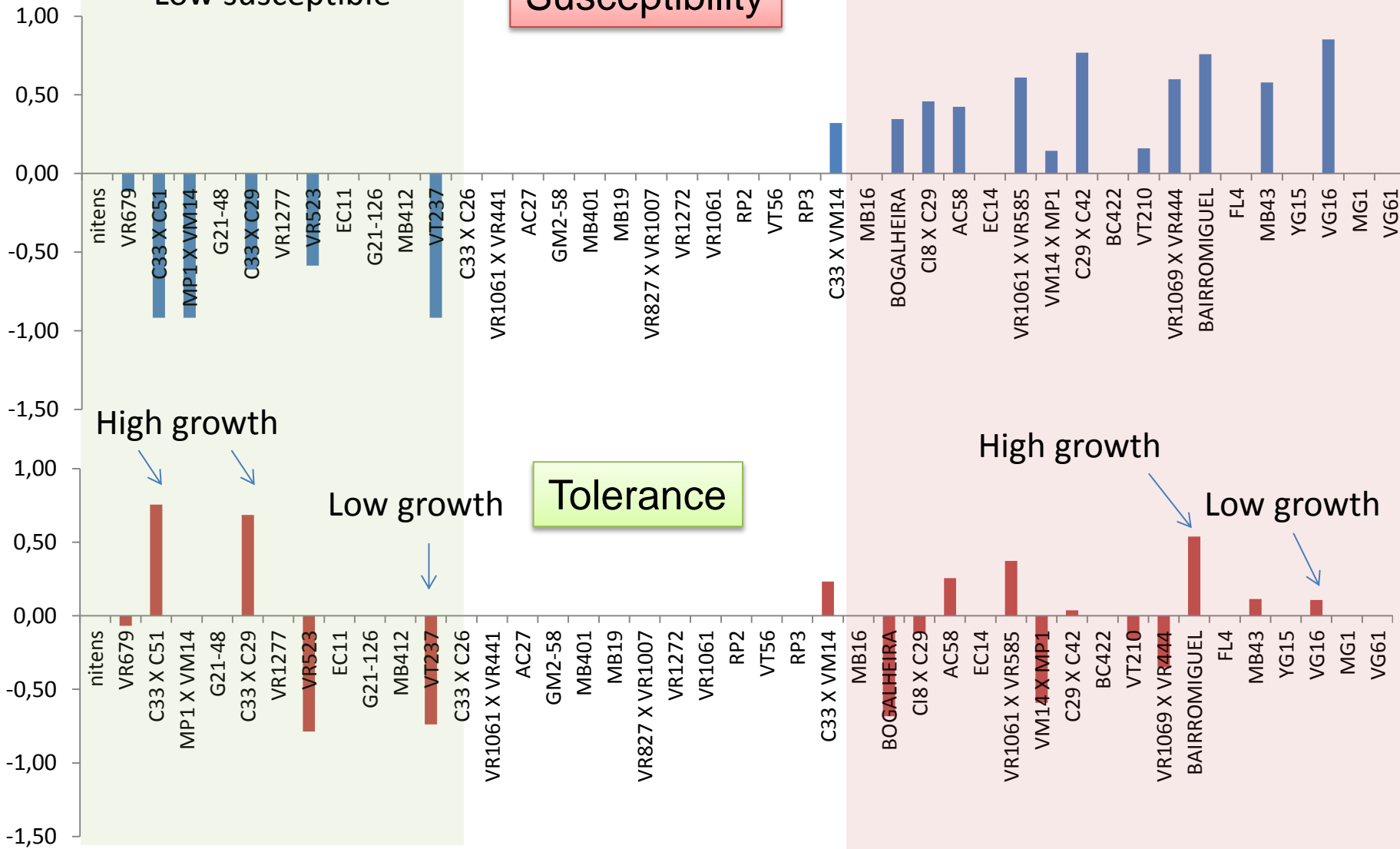
High growth

Low growth

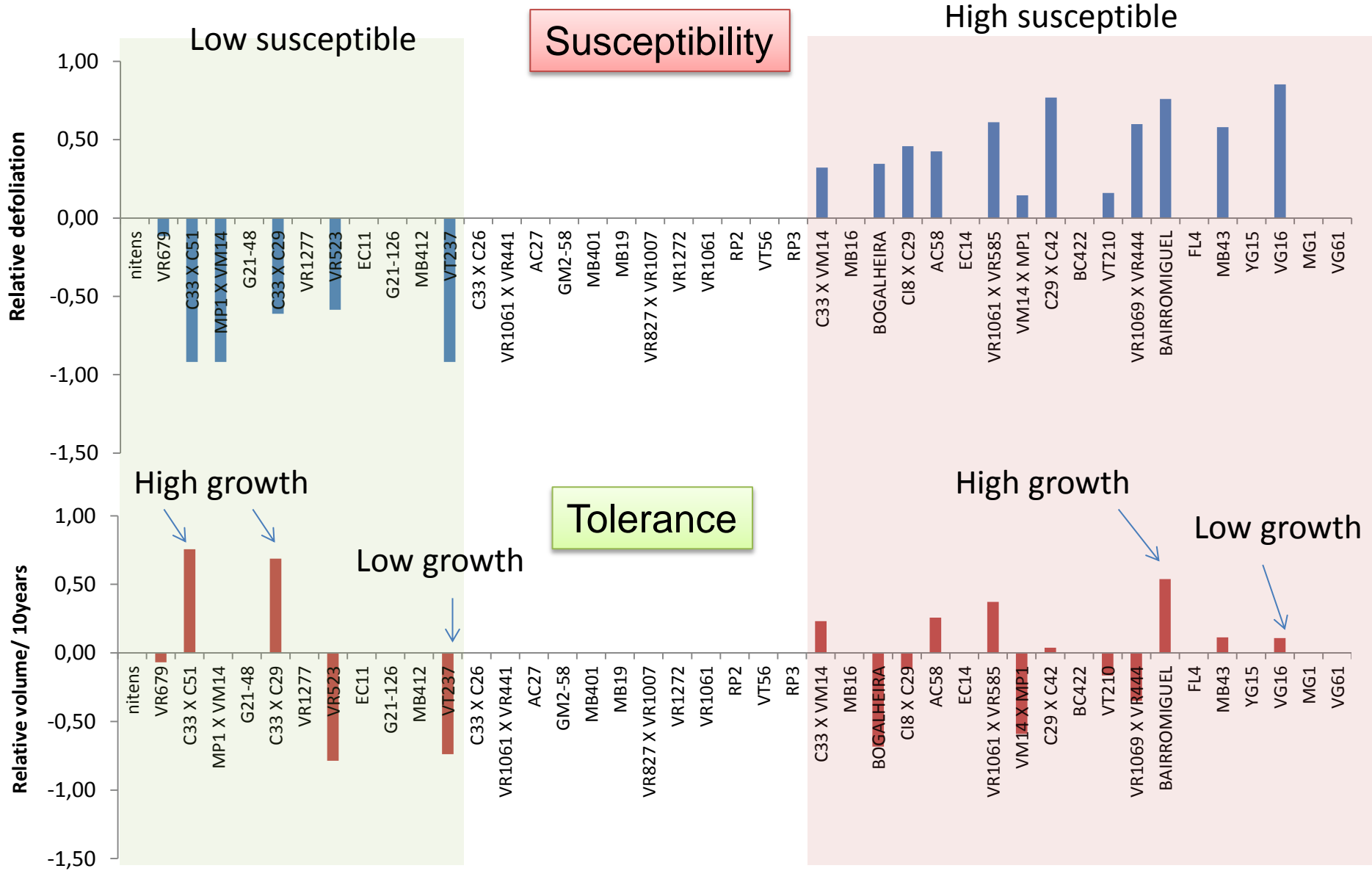
Tolerance

High growth

Low growth



Oleiros 2



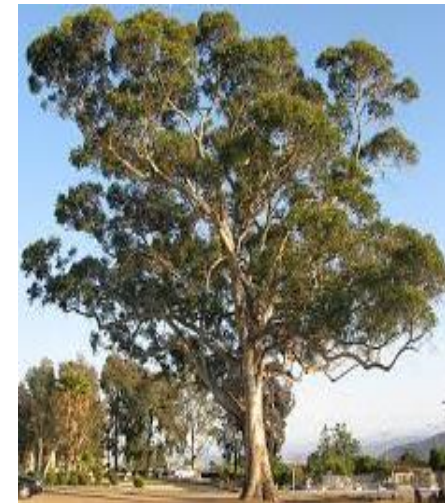
Conclusions

- Susceptibility and tolerance must both be taken under consideration regarding the selection of new genetic material
- Most susceptible genotypes could ecologically compensate insects damage by their tolerance



More susceptible genotype

Higher
defoliated



Compensated by
higher TOLERANCE