

Ash Dieback and Emerald Ash Borer ranges overlap - despair or hope?

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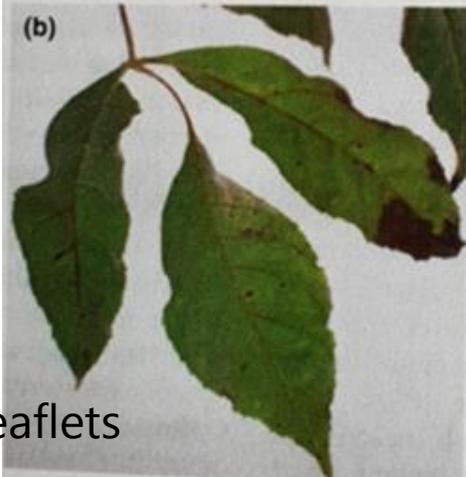


Three decades of ash dieback in Europe

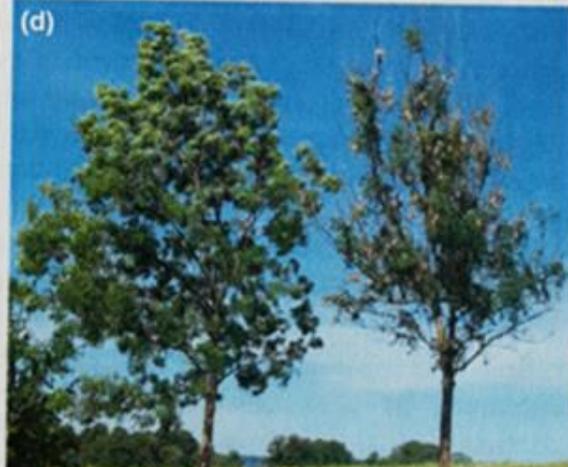
White apothecia



Nectrosis on stem of *F. excelsior*

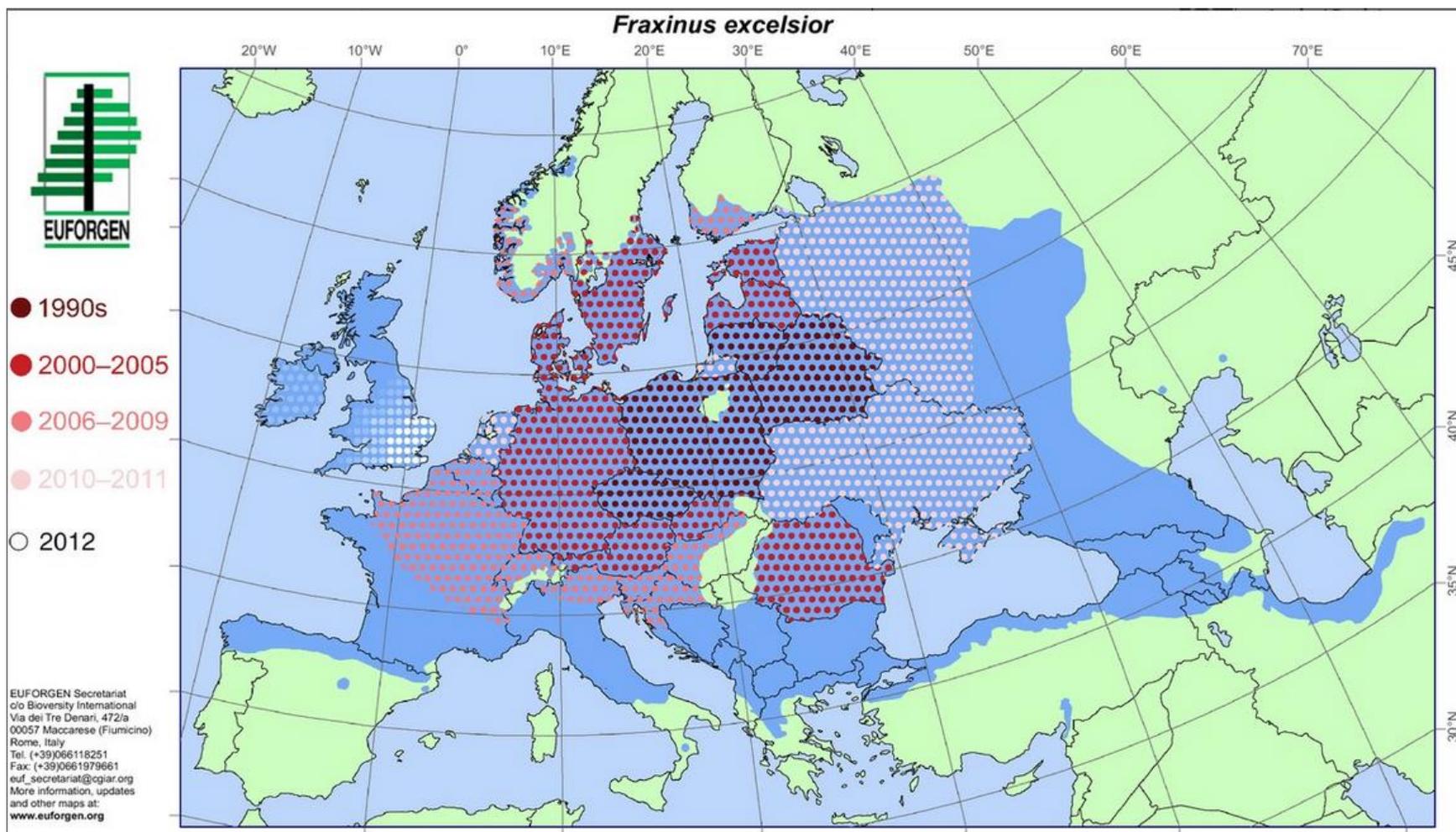


Infections of leaflets



Crown symptoms

First records of *Hymenocyrphus pseudoalbidus* (anamorph *Chalara fraxinea*)



This distribution map, showing the natural distribution area of *Fraxinus excelsior*, was compiled by members of the EUFORGEN Networks

Citation: Distribution map of Common ash (*Fraxinus excelsior*) EUFORGEN 2009, www.euforgen.org.

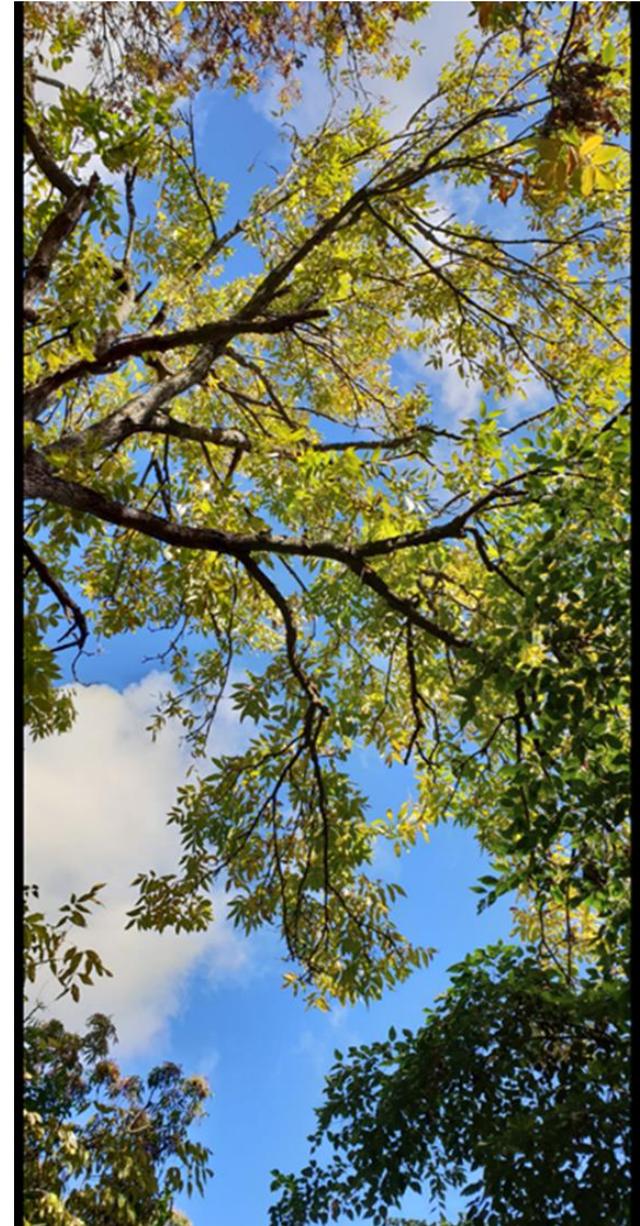
First published online in 2003 - Updated on 30 July 2008

McKinney et al 2014

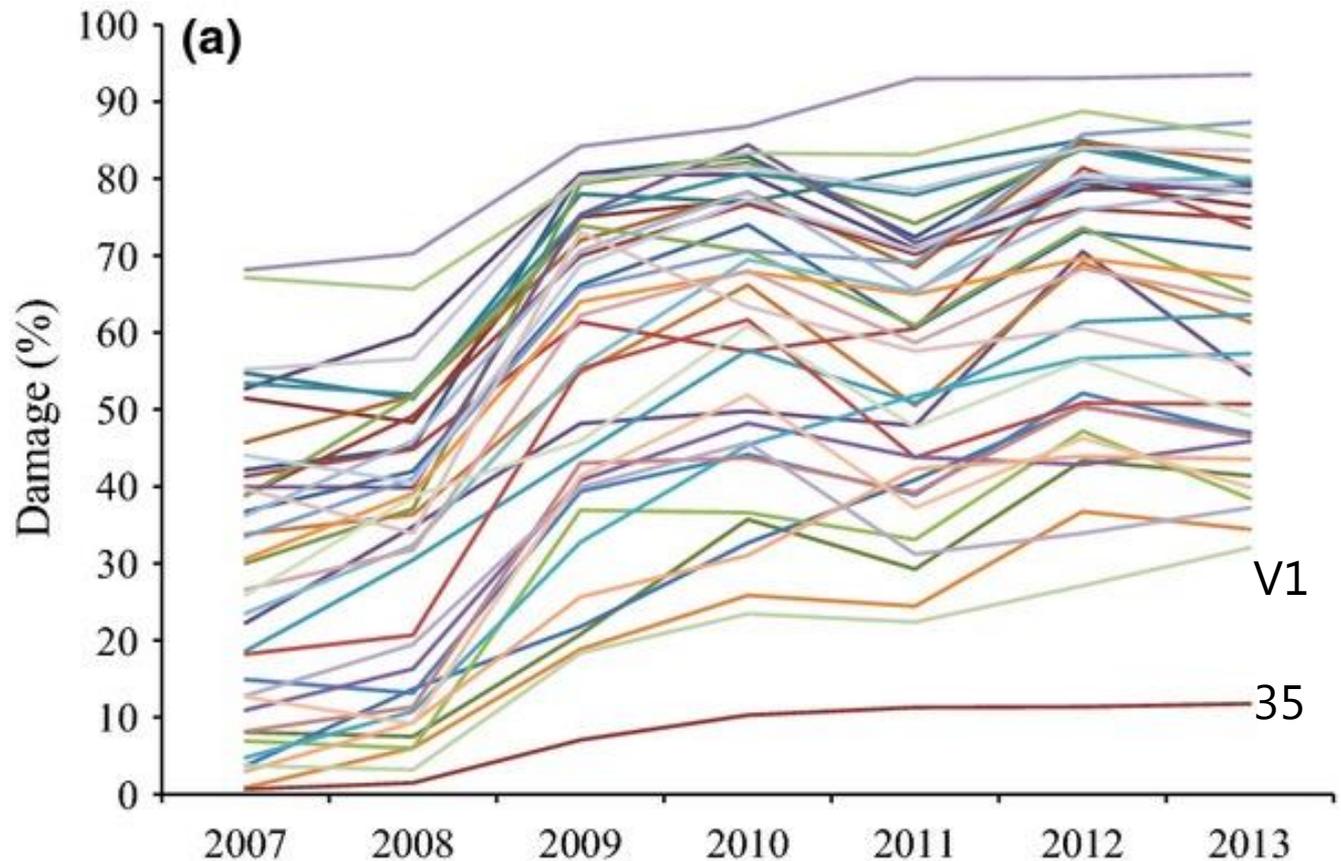
Geneticist versus entomologist approach



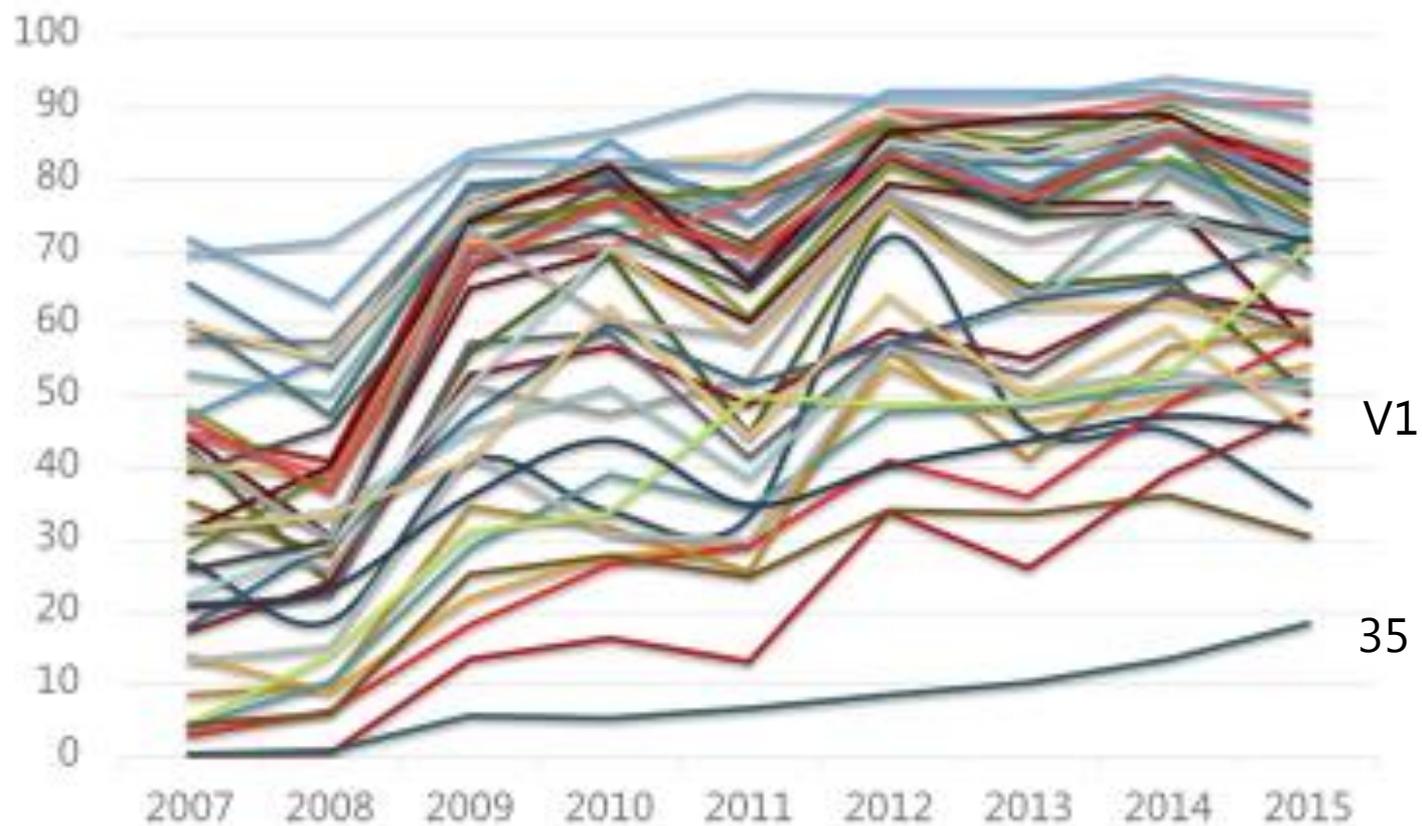
Syrach Larsen's V1 (male)
graft 1935, Arboretum
Hørsholm



Development of average crown damage of 39 ash clones (McKinney et al 2014)



Development of average crown damage of 39 ash clones - continued



Randers, planted 2005: 3200 trees offspring from 98 mother trees

Now, 2018

Selection works!



How will ADB resistant trees react to EAB?



Annual damages from EAB in US

- 38 million USD for federal government,
- 850 million USD for local government,
- 350 million USD for household,
- 380 million USD for residential property value
- 60 million USD forest landowner timber losses

(Aukema et al. 2011).

“We started counting dead ash trees in thousands, then hundred thousands, then millions. When we reached hundreds of millions, we stopped counting!”
Deborah McCullough, Feb. 2016

Voronezh, Russia, May 2017

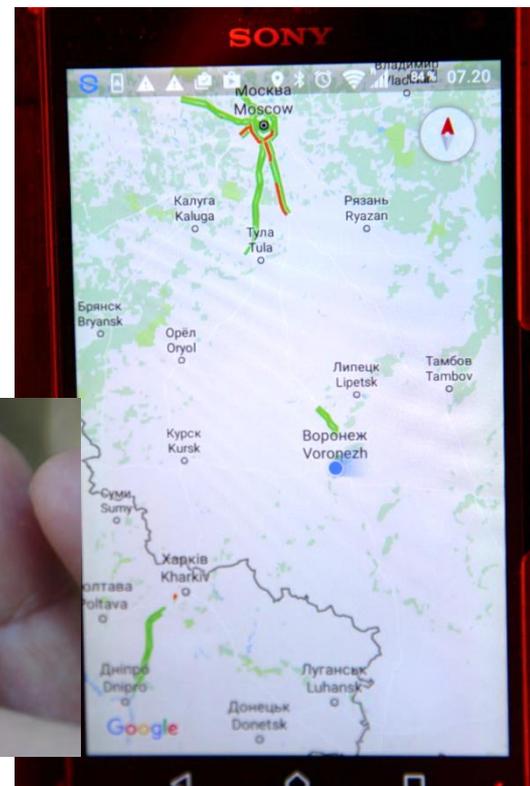


Erik

Yuri

Lidia

EAB Voronezh maj 2017









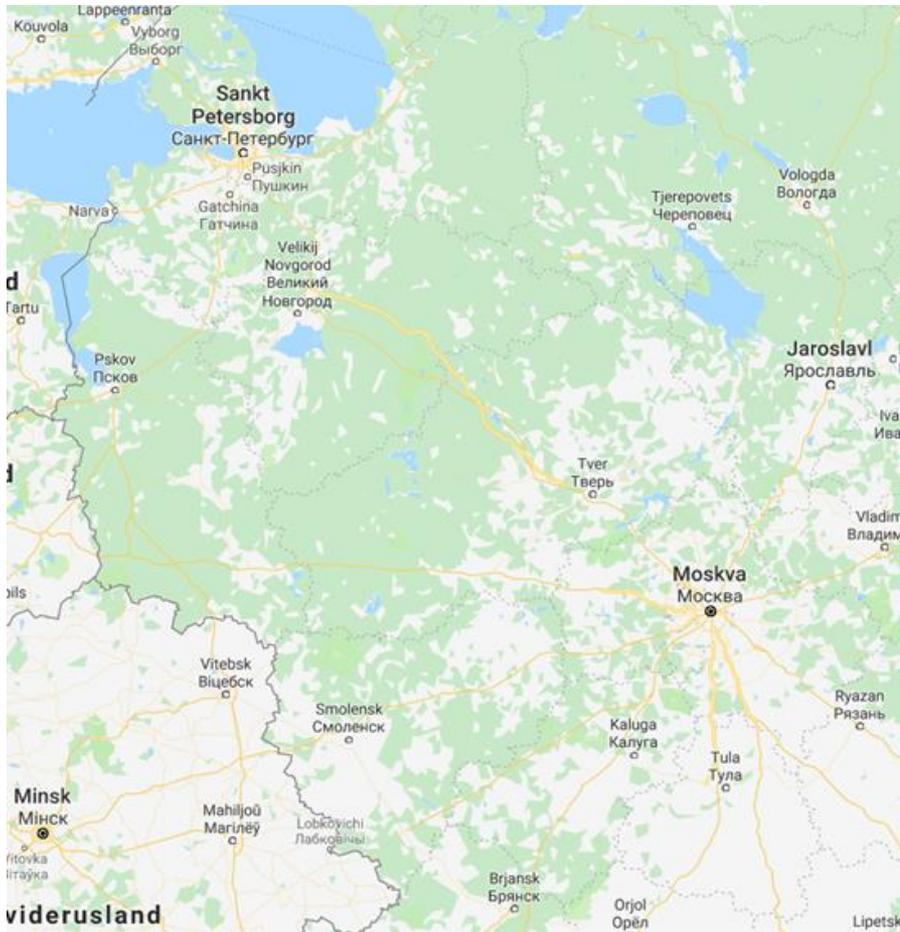




Reforestation?



Tver, Sept 2018



Possible interactions ADB / ALB?

- Synergy or competition?
- Prepare the host?
- Vector?
- Opportunities for experiments!

Most safe place to investigate this and to test resistance against both ADB and EAB in practise would be in a place where they both are present already.

Fraxinus pennsylvanica tree
attacked by both -
pathogen and emerald
ash borer -
at the street of Voronezh,
2017



EAB can be fed on ash leaves till eggs laying

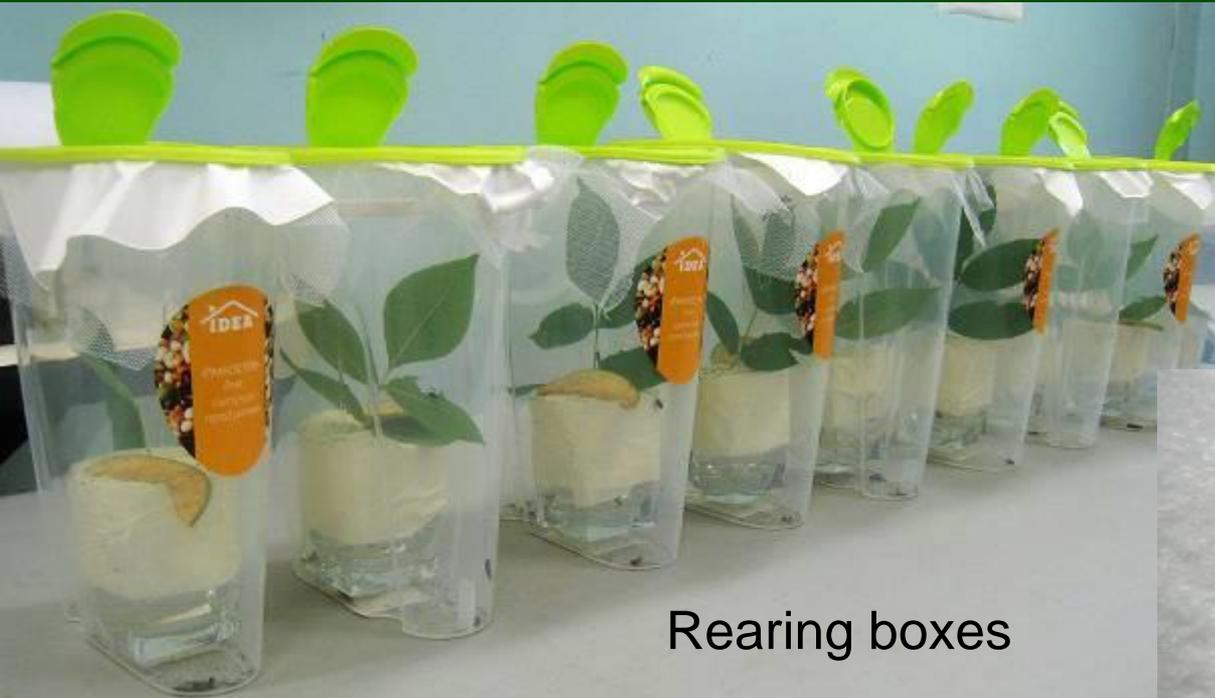


EAB food remains

2-3 pairs per rearing box should be separated for successful mating and oviposition



Mating



Rearing boxes



1-day old eggs

10-days old egg

Eggs are placed on small ash logs and kept
in water at room temperature
& summer light regime



Conclusions – take home messages

- There will always be some variation in the population susceptibility and you should exploit that promoting resistance
- If you start cutting every tree while they show no symptoms, you prevent selection from finding trees for the future
- But there is no harm in trying to reduce losses. Successful eradications do exist!
- “It is never too late to despair”



Thank you for your attention!

Acknowledgement

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