



Sveriges lantbruksuniversitet
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Resistance to SDHI but with analysis problems

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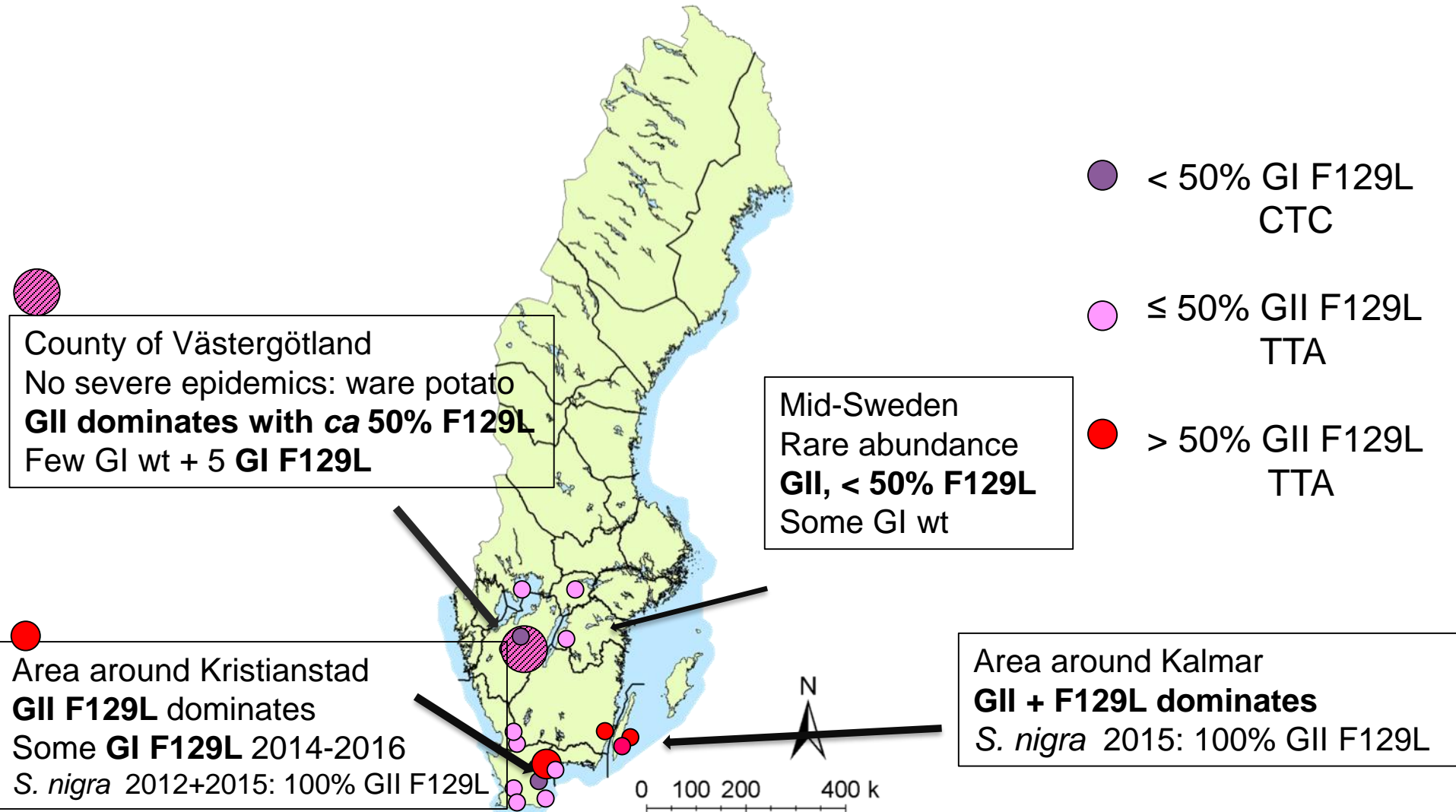
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SLU

Occurrence of F129L in *A. solani* in Sweden

- analysis of leaf samples 2009-2016



Occurrence of F129L in *A. solani* in Fennoscandia

- analysis of leaf samples 2014-2016

Norway

GII wt (ca 35%)

GII F129L (ca 60%)

In one area:

GI F129L 2015+2016

Finland

GI wt (ca 30%)

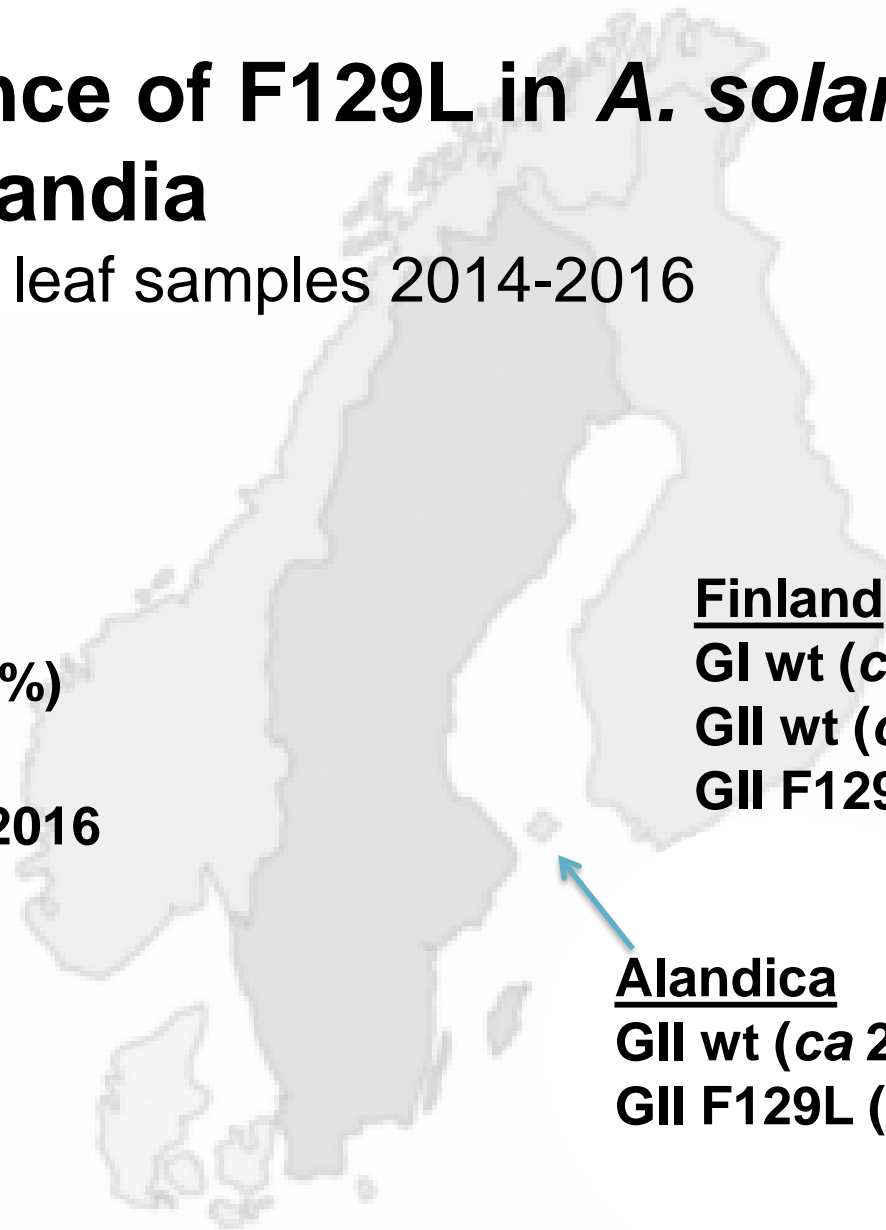
GII wt (ca 30%)

GII F129L (ca 40%)

Alandica

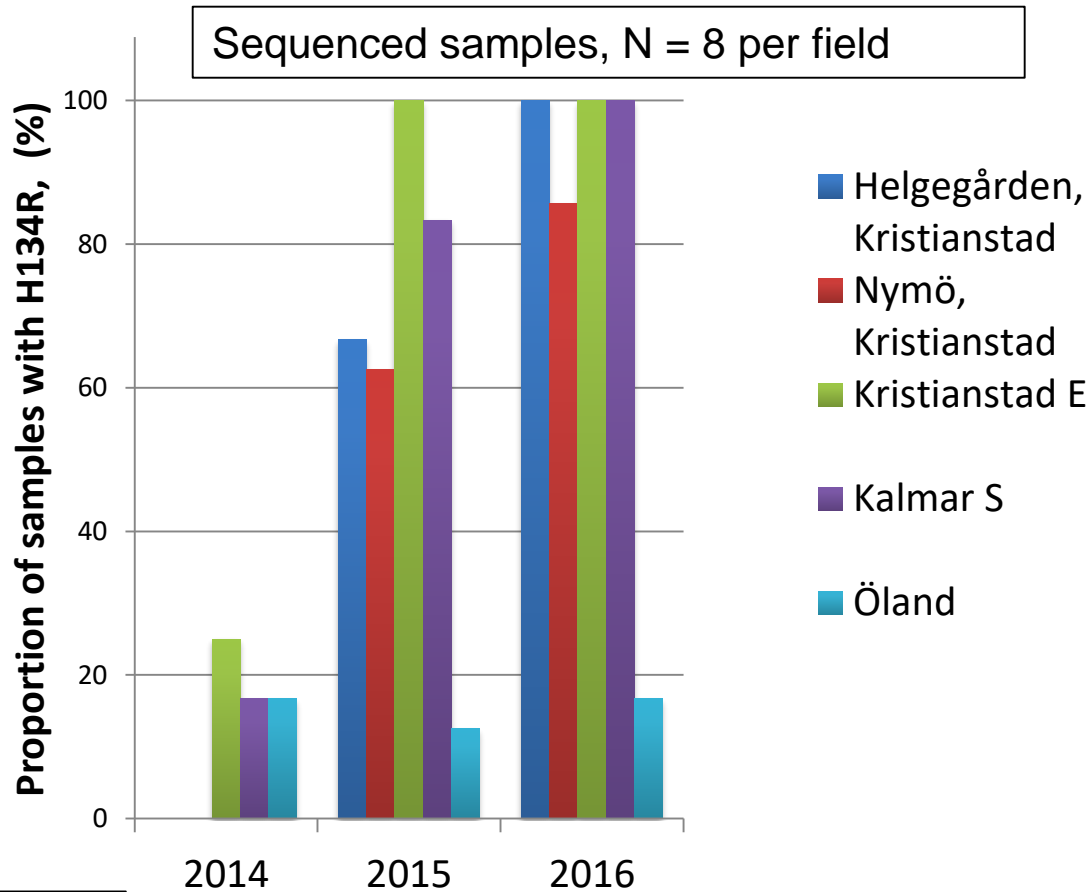
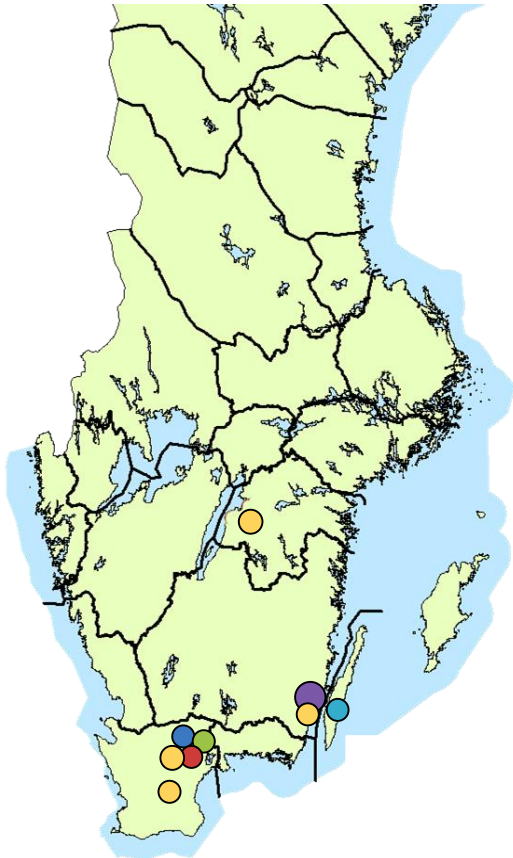
GII wt (ca 20%)

GII F129L (ca 80%)



Occurrence of H134R (SdhC) in *A. solani* in Sweden

- analysis of leaf samples 2011, 2014-2016



2016: H134R also identified in **Mosslunda** and another field in Skåne, one south of Kalmar and one sample in **Östergötland**

2011: Non-mutated isolates from Nymö and Helgegården

Field trial 2017

Nymö, Kristianstad cv Kuras

- Control,
- 4x Signum
- Alternating 3x Revus Top and 2x Signum
- Alternating 3x Revus Top and 2x Signum + biostimulant
- 2x Amistar
- **129 isolates**
- **AFLP (Hilde Coolman, master student)**
- **Sensitivity test: boscalid (HC)**
- **Fungicide resistance mutations (EE)**



Field trial 2017

Nymö, Kristianstad cv Kuras

- Eight of 40 amplified **SdhB** had **H278Y** (C
to T at 990) N=129
- found in isolates from
 - Control,
 - Revus Top + Signum + biostimulant
 - Amistar
- **SdhC H134R** in 70% of sequenced isolates
- **If H278Y in SdhB = non-mutated in SdhC & vice versa**
- **SdhD non-mutated**
- 20-40 times less sensitive to boscalid than isolates from 2011.



Problems during analysis for SDHI resistance

- MultiPlex PCR by Mallik *et al* 2014
 - False positives for SdhC
 - Made two new revers primers for SdhC without mismatch, did not work either for sequences Swedish isolates



Problems during analysis for SDHI resistance

- Sequencing of SdhB, SdhC and SdhD
 - Mallik *et al* 2014
 - SdhC and D works for southern population
 - **SdhB** sometimes no amplification in southern Sweden
 - In Mid-Sweden, **SdhC** works sometimes for GII in 2016 but only for GI in 2017
 - Different sequences in SdhB, C and D in the population in Mid-Sweden.
Also seen in cytochrome *b*, GI and GII.



Thank you for your input!

