Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

Hushållnings sällskapet

# Multiple fungicide resistance dominates in the southern population of *Alternaria solani* in Sweden

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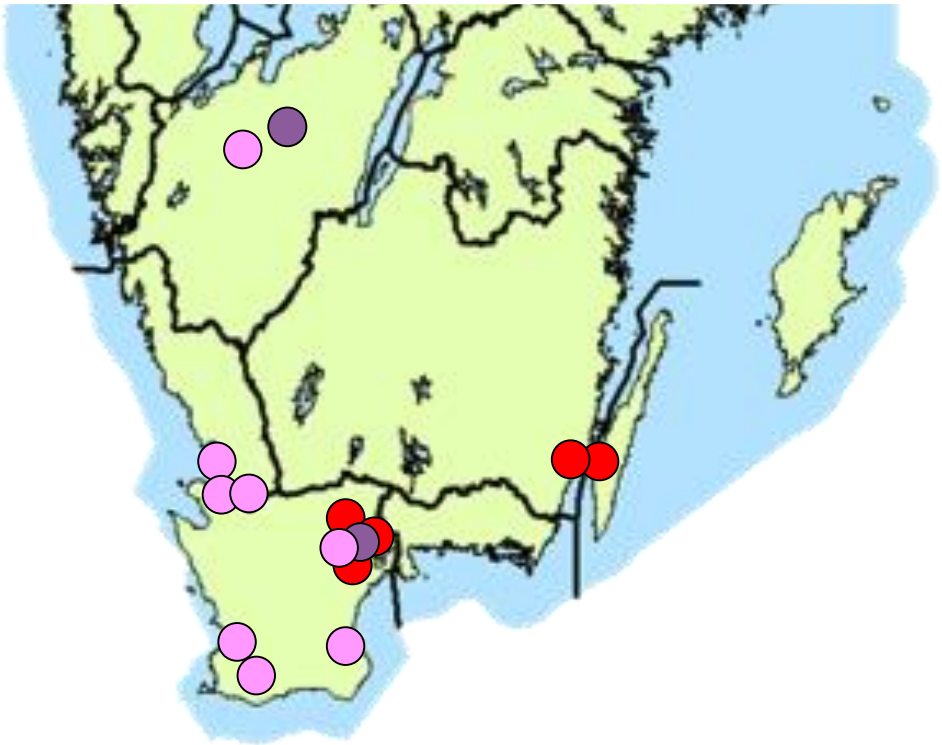
# Occurrence of F129L in *A. solani* in southern Sweden

- analysis of leaf samples 2009-2017



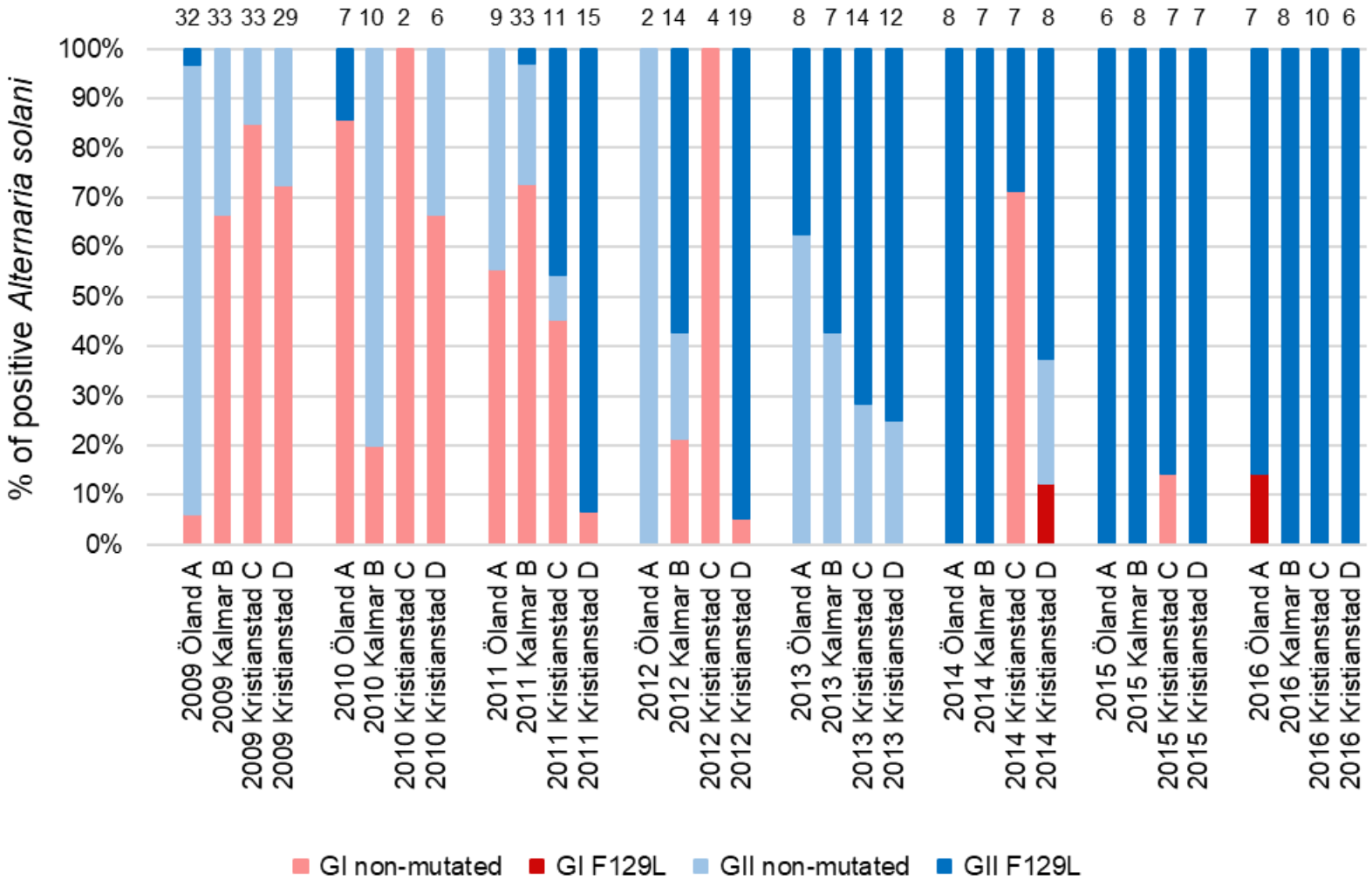
< 50% GI F129L CTC

≤ 50% GII F129L TTA

> 50% GII F129L TTA

# Abundance of F129L at four farms, 2009-2016

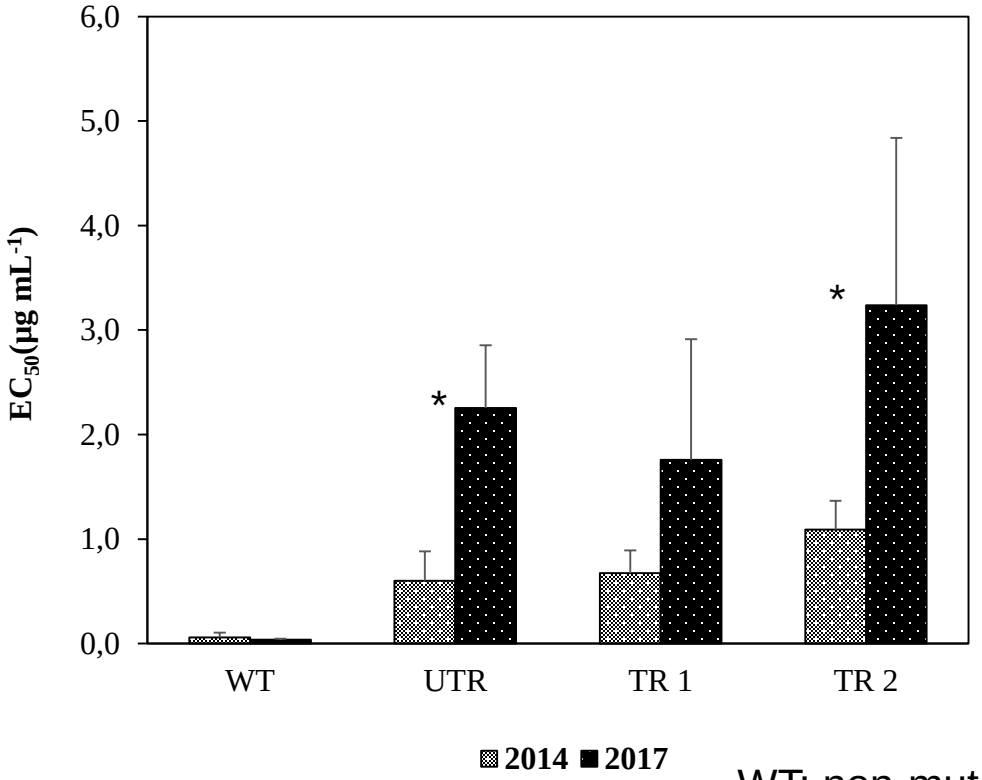
## A shift in *A. solani* population




Edin et al., accept.EJPP

# Sensitivity test

$EC_{50}$ –values for azoxystrobin in isolates with F129L from Nymö increased from 2014-2017

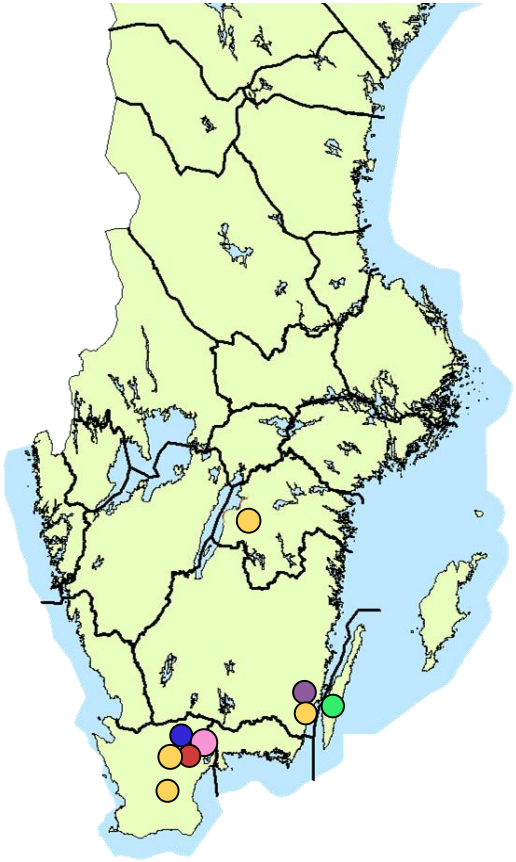


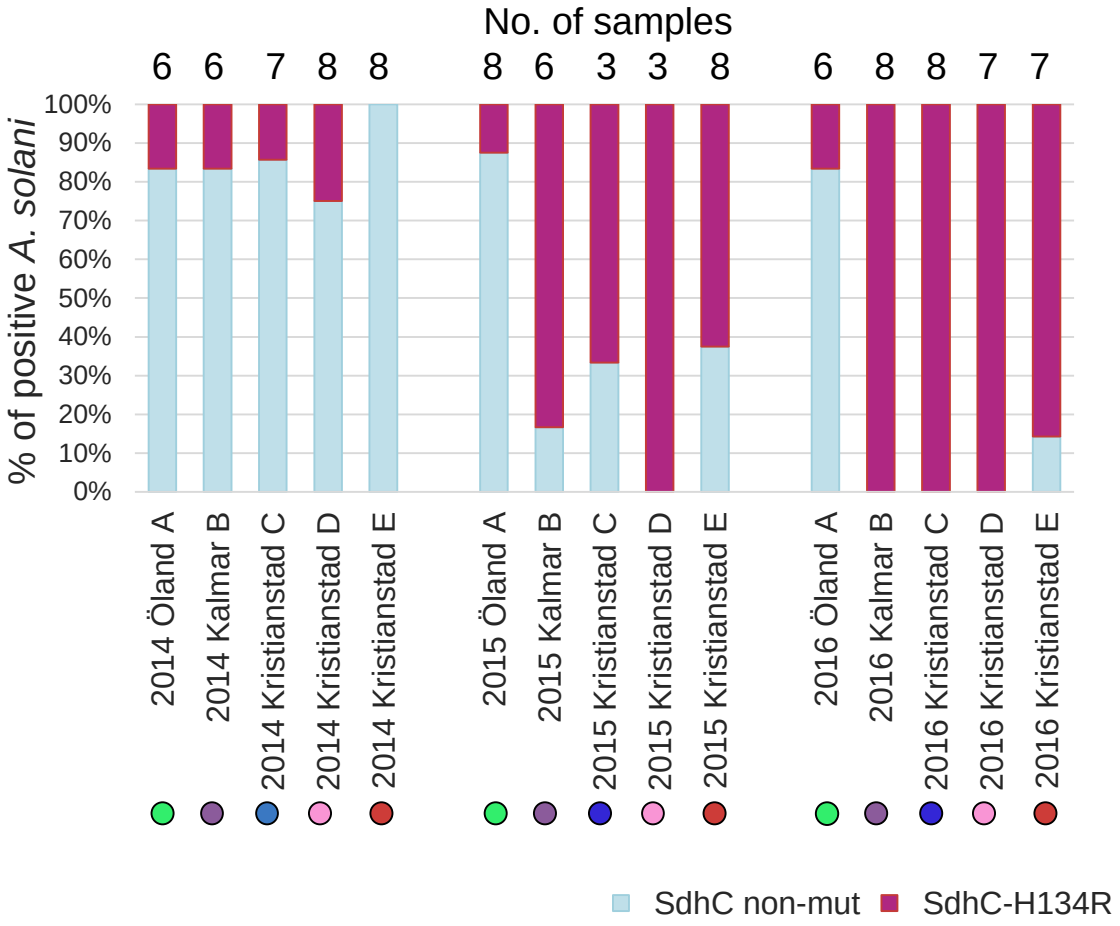

WT: non-mutated isolates from 2011
UTR: Not treated against *A. solani*
TR 1: 3x Revus Top + 4x Signum
TR 2: 2x Amistar

Odilbekov et al., submitted

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

- analysis of leaf samples 2014-2016






H134R found in 2016

# SdhC genotype of *A. solani* from 2011, 2014-2017 Nymö, Kristianstad cv Kuras

- 2011, all non-mutated (3 samples)
- 2014, all non-mutated (153 samples from field trial)
- 2015, 2 non-mutated, 6 H134R (control in field trial)
- 2016, 1 non-mutated, 7 H134R (4x Signum)
- 2017, 34 non-mutated, 67 H134R (field trial)

# Isolates from field trial 2017 Nymö, Kristianstad cv Kuras

| | SdhB Non-mutated | SdhB H278Y | *Sum of isolates* |
|---|---|---|---|
| SdhC Non-mutated | **9*** | 25 | *34* |
| SdhC H134R | 65 | **2** | *67* |
| *Sum of isolates* | *74* | *27* | *101* |

Varification needed

*** 1 sample was GI F129L and non-mutated SdhB and SdhC**
**100 samples were GII F129L**

Collaboration with J. Derpmann, Bayer CS

# $EC_{50}$-values for boscalid – isolates from 2017

| | % germination at concentrations (µg/mL) | | | | | |
|---|---|---|---|---|---|---|
| Isolate | 0,01 | 0,1 | 1 | SdhB | SdhC | SdhD |
| wt2 | 73 | 38 | 11 | | | |
| wt21 | 100 | 57 | 0 | | | |
| | | | | | | |
| 113.2 | 97 | 92 | 90 | - | - | - |
| 113.5 | 99 | 96 | 92 | - | - | - |
| 122.1 | 100 | 89 | 87 | non-mut | H143R | non-mut |
| 124.2 | 100 | 99 | 95 | H278Y | non-mut | non-mut |
| 131.1 | 99 | 97 | 92 | non-mut | H143R | non-mut |
| 131.4 | 99 | 96 | 86 | non-mut | H143R | non-mut |
| 132.1 | 78 | 74 | 49 | H278Y | non-mut | non-mut |
| 133.1 | 89 | 86 | 84 | - | - | |
| 134.1 | 98 | 89 | 89 | non-mut | H143R | non-mut |
| 141.1 | 96 | 91 | 87 | non-mut | H143R | non-mut |
| 141.2 | 98 | 95 | 87 | non-mut | H143R | non-mut |
| 142.1 | 100 | 98 | 93 | non-mut | H143R | non-mut |
| 143.1 | 89 | 89 | 86 | non-mut | H143R | non-mut |
| 144.1 | 100 | 100 | 98 | non-mut | H143R | non-mut |
| 144.2 | 91 | 91 | 85 | non-mut | H143R | non-mut |
| 151.1 | 98 | 97 | 96 | - | - | |
| 152.1 | 99 | 80 | 51 | H278Y | non-mut | non-mut |
| 152.4 | 100 | 98 | 92 | non-mut | H143R | non-mut |
| 153.1 | 100 | 97 | 95 | - | - | |
| 154.1 | 99 | 85 | 84 | non-mut | H143R | non-mut |

Difficult since boscalid has low solubility

$EC_{50}$ for wt ≈ 0,1

Extrapolation: $EC_{50}$>10?? For most other isolates

We use Cantus® nowadays (only one a.i.: boscalid)

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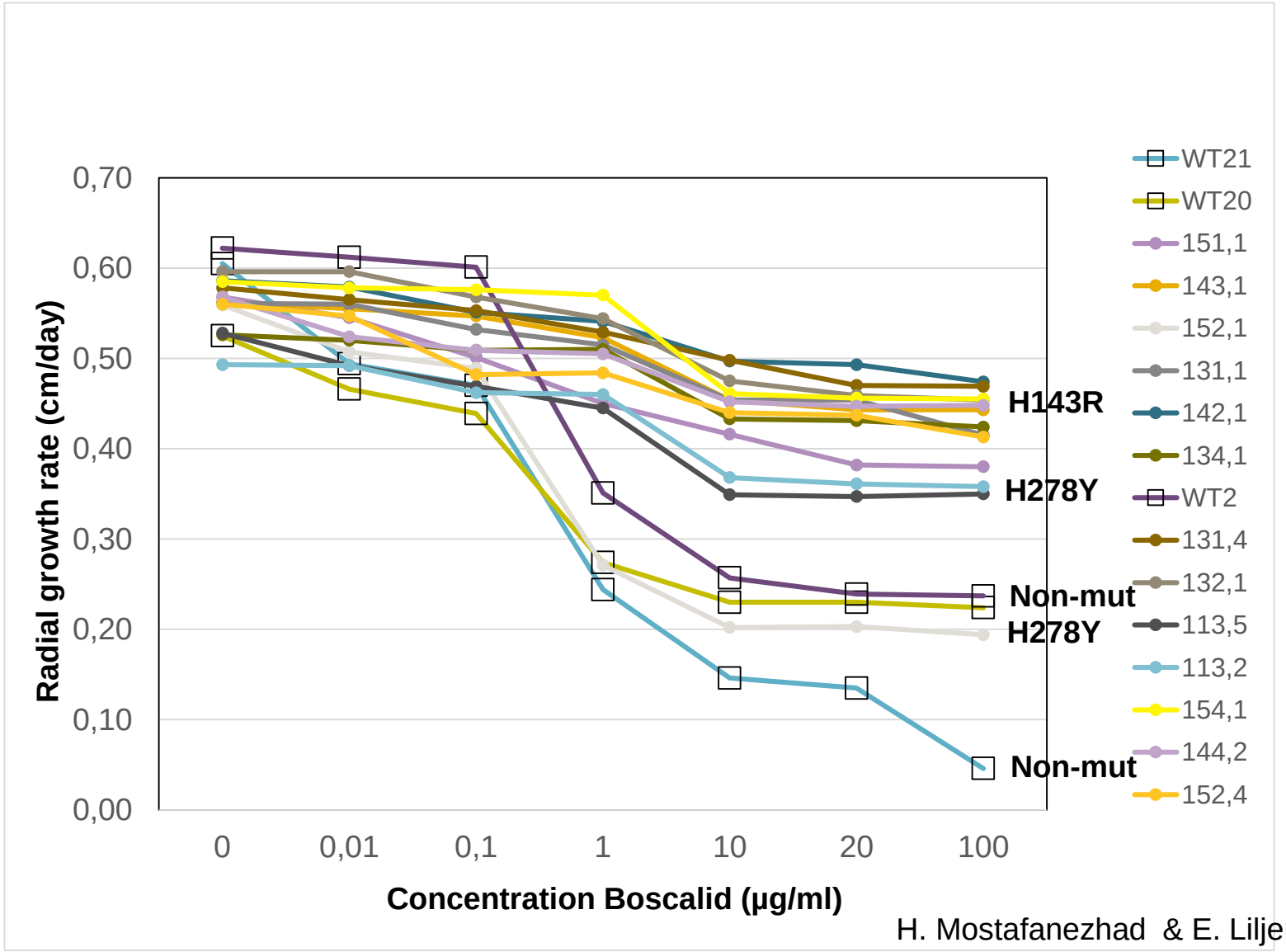
# Growth rate on agar media with boscalid (Cantus)

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# Thank you for your input!