Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

The early blight situation in Sweden

– species abundance and strobilurin sensitivity

Eva Edin and Björn Andersson
Dept. Forest Mycology and Plant Pathology
Uppsala BioCenter
Swedish University of Agricultural Sciences

Outline

- Situation in Sweden 2009 - 2012
  - Inventory of causal agent(s)
  - Strobilurins – useful or not?

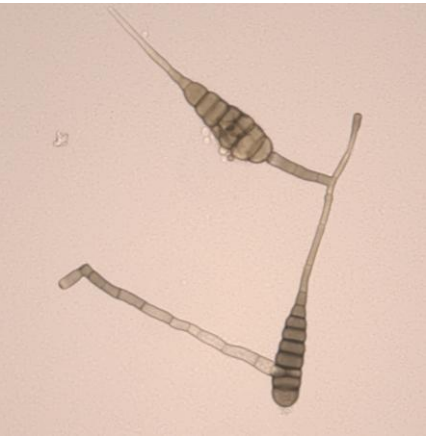
Sampling sites 2009-2012

- Beginning and end of August and mid September

Identification of *A. solani*

- Species specific PCR primer
  - Also used for sequencing of the cytochrome *b* gene for strobilurin tolerans
  - Published in *Crop Protection* 38, page 72-73

Identification of *A. alternata*



- Species specific PCR primer
  - Zur *et al.*, (*2002*)

Results species identification

2009 - 2010

- *Alternaria solani* was common in the majority of the lesions.
- *A. alternata* found in a few lesions in co-occurrence

2011

- *A. alternata* was common in August
- *A. solani* appeared in September, most often in co-occurrence with *A. alternata*

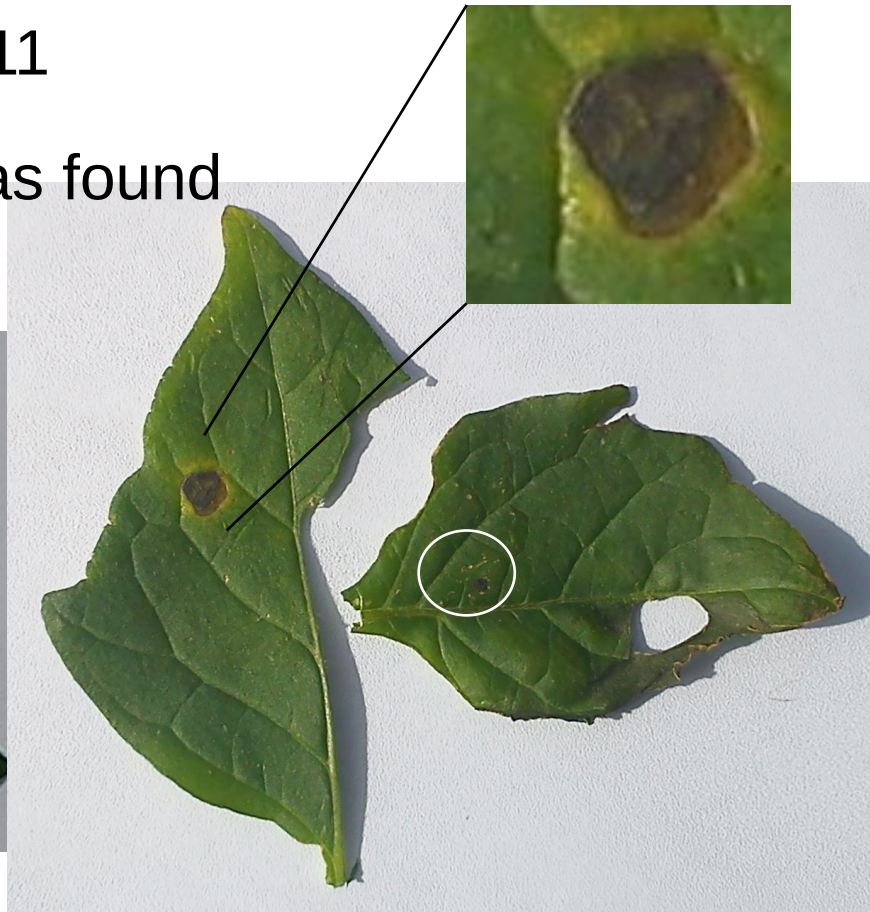
Results species identification

2012

- *A. solani* was common in south-eastern Sweden in August and September
- *A. alternata* was found in approx. one third of the samples, mostly in co-occurrence
- *A. alternata* was more common than *A. solani* in one field outside Kalmar

Early blight on black nightshade

- Scattered lesions were found on *Solanum nigrum* in late August and mid Sept 2011 and 2012
- All were *A. alternata* 2011
- In 2012 both species was found



Strobilurin sensitivity

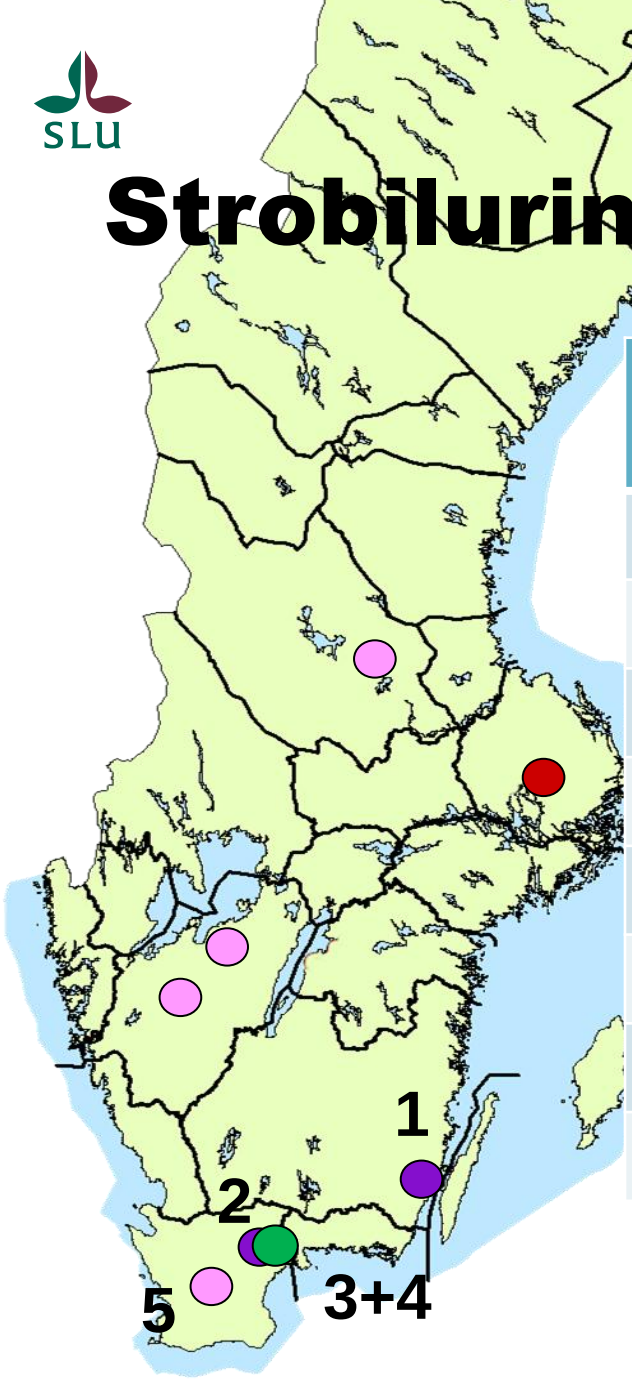
- Potato crops on one farm outside Kristianstad were severely damage in 2011 and 2012.
- All samples with *A. solani* were sequenced (cyt *b*).
- New method with restriction site at G143A (Vega *et al*., 2012 and new primer combination)

Strobilurin sensitivity *A. solani*

2009-2012

- F129L was not found in *A. solani*
- All samples with *A. solani* from a farm (2 fields) outside Kristianstad (2012) had a very strange sequence in cytochrome *b.*
  - The site for F129L was not found at all.

Strobilurin sensitivity *A. alternata*



	2011 WT	G143A	2012 WT	G143A
1. Kalmar	17	21	10	9
2a. conv.	11	5	-	-
2b. org.	16	11	-	-
3a. Kuras	4	17	4	16
3b. Burana	-	-	0	13
4. Kardal	-	-	0	2
5. Elkana	-	-	2	0
1+3 Nightshade	3	4	1	4

Summary of the early blight project

- *Alternaria solani* seems to be the main causal agent to early blight in Southern Sweden
  - Something new in 2011: *A. alternata* in August
- Strobilurins seems to still be effective on *A. solani*
  - New sequence at one farm

Summary, continued

- *Alternaria alternata* in August
  - Pathogenicity needs to be investigated
- The majority had G143A
- Shift of causal agent?
  - May be linked to G143A and selection

Any Questions?

Thank You!
Tatties are the best!

1

Risk of mix-up

1. Potassium deficiency

- Dark green younger leaves
- Wrinkled leaves
- Dry rolled leaf edges
- Necrosis between the veins

2. Magnesium deficiency

- Chlorosis between veins that becomes necrosis
- Middle of the leaf
- Leaf edges still green

2

Photos from Faktablad 53J

3

Risk of mix-up, cont.

3. Manganese deficiency
   - Lower leaves
   - Brown spots mainly along veins
4. Boron toxicity
   - Often at the edge of the leaf
5. Ozone damages
   - Due to boron deficiency?
6. Insect damages

4

5

Photos from http://www.hbci.com/~wenonah/min-def/potato.htm and Turkensteen

Unknown cause

Publications

- Edin E. 2012. Crop Protection 38, 72-73.
- Edin E. & Torriani S. 2012. Chapter in: Thind (red). *Fungicide Resistance in Crop Protection: Risk and Management*. CABI.
- Blixt E. 2011. Torrfläcksjuka på potatis. Faktablad om växtskydd, Jordbruk 128J. (Edin in the online version).
- Edin E. 2011. Fungicider och fungicidresistens. Faktablad om växtskydd, Jordbruk 33J.


FAKTABLAD OM VÄXTSKYDD
JORDBRUK 128 J

TORRFLÄCKSJUKA PÅ POTATIS