

Fungicide strategies against early blight and presence of F129L in Sweden

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SUMMARY

Early blight on potato is an important disease in southeast Sweden and occurs in the middle part of Sweden even though it has not an intense epidemic phase there. The fungicide strategy against *Alternaria solani* dominates by strobilurins, sometimes in combination with boscalid. Potato cultivars with high host resistance would be preferable but there are no cultivars with high level of resistance available on the market. The susceptibility (host resistance) to *Alternaria* sp. is related to leaf position and senescence, which depend on plant developmental stage and maturity type where late maturing cultivars are more resistant. We have established methods for greenhouse testing of host resistance on intact plants and compared the lesion size to the disease scoring (AUDPC) in field trials and got good correlations ($R= 0.96$).

The common strategies against early blight were tested in field trials 2014. Two applications of Revus Top (mandipropamid and difenoconazol) followed by four applications of Signum (boscalid and pyraclostrobin) were applied with full and half doses in cultivars Kardal and Kurus. The timing of the first treatments was also tested but there was no or small effect on disease development between early or late first treatment. At the end of the season (September 2) there were still severe infections also with fungicide treatments and lowered doses intensified the infection. Full dose of the treatment strategy above was also tested against two applications of Amistar (azoxystrobin) and an untreated control in another field experiment. The untreated control and the Amistar treatment had similar disease development even though it was a small yield effect by Amistar. The Revus Top/Signum treatment was effective in inhibiting early blight until the end of August where the disease began to develop epidemically.

The occurrence of F129L was analysed in field samples from southern and middle parts of Sweden. In the southeast part (around Kristianstad) the genotype 2 (GII) dominated and the majority possessed the F129L substitution. In the middle part of Sweden only GII has been found and half of them possessed the F129L substitution in 2013 whereas none were found in 2014. Genotype 1 (GI) is rather scarce in Sweden but three isolates with the F129L (CTC) substitution have been found in the area surrounding Kristianstad (collected 2011 and 2013).

The effect of the F129L substitution on fungicide sensitivity was tested by Bayer CropScience, Monnheim (Dr. Andreas Mehl *et al.*). They found a reduced sensitivity to fenamidone but not to

trifloxystrobin in the isolates with F129L. However, there was no sign of reduced sensitivity to boscalid among 17 tested isolates. The sensitivity to azoxystrobin and pyraclostrobin is currently being tested at our lab.

The genetic structure of about 60 Swedish isolates of *A. solani* and 20 isolates of *A. alternata* (10 from Sweden and 10 from Tajikistan) were investigated with AFLP and microsatellite markers. The genetic variability was relatively high among isolates of *A. solani* and significant genetic differentiation was found among populations from different locations in southeast Sweden. Both GI and GII were found among the isolates but the F129L substitution was only detected in GII isolates.

KEYWORDS

Alternaria solani, early blight, fungicide sensitivity, genetic structure