

## SESSION 5:

### KEEPING ONE STEP AHEAD OF PESTS AND DISEASES / GARDER UNE LONGUEUR D'AVANCE SUR LES PARASITES ET MALADIES / KRANKHEITEN UND SCHÄDLINGEN EINEN SCHRITT VORAUS

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### CHARACTERISATION OF SUGAR BEET VARIETIES BY DIFFERENTIAL REACTION TO *CERCOSPORA BETICOLA*

#### ABSTRACT

*Cercospora beticola* is the most widespread foliar pathogen in sugar beet worldwide. In Germany, *Cercospora* leaf spot disease (CLS) occurs on ca. 80% of the sugar beet acreage and is mainly controlled by fungicides. Resistance breeding started already in the 1920s, but due to the yield penalty of less susceptible varieties in the absence of the pathogen they still lack acceptance in commercial agriculture.

The objective of this study was to develop a method to evaluate yield performance of sugar beet varieties as affected by CLS in variety trials. Data from 182 variety trials in Germany from 2009-15 were analysed. All trials were set up in a split-plot design with two fungicide levels (non-treated/treated) as the main plot and variety as the sub-plot. Based on assessments of disease severity of CLS, trials were assigned to groups with no/low, medium or strong infestation. To evaluate susceptibility/resistance of the tested varieties, the effect of infestation level and fungicide treatment on white sugar yield was analysed.

Changes in variety ranking among infestation levels were minor in the fungicide treatment but considerable without fungicide, indicating that superiority of varieties depends on infestation level of *C. beticola*. To prove this effect, the formation of two groups of infestation levels (no/low to medium vs. strong infestation) was sufficient. The results showed furthermore that due to breeding progress, current resistant varieties are able to catch up with susceptible ones in environments without infestation of *C. beticola*, indicating a new generation of resistant sugar beet varieties.