Sensibility of Scab-resistant Varieties to Sooty Blotch

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Abstract

Scab-resistant apple varieties are urgently required in ecological fruit growing in the Lake Constance region. In the season 2007 more than 60 scab-resistant varieties were investigated concerning their sensibility to sooty blotch. Apart the influence of harvest periods (early or late) the investigations show an influence of the cross parents of new varieties. Varieties with Topaz as one parent were much more sensitive to sooty blotch than varieties with Florina as cross partner.

Keywords: Sooty blotch, scab-resistant varieties, susceptibility, Topaz, Florina

Introduction

Scab-resistant apple varieties are urgently required in ecological fruit growing in the Lake Constance region. But with the reduction of pest management against apple scab the problem with sooty blotch has increased. Although the fungi only grow epiphytically on the fruits surface, there are heavy losses in the form of blemished fruits. The aim of the current investigation was to evaluate different scab-resistant varieties for their sensibility to sooty blotch.

Material and Methods

In the season 2007 more than 60 scab-resistant varieties were investigated concerning their sensibility to sooty blotch. The fruits come from an orchard without fungicide treatment, where scab-resistant varieties are currently being tested concerning their suitability for commercial organic production. Incidence and disease severity were assessed using the following pattern: 0 = no symptoms, 1 = „traces“, 2 = <10%, 3 = 10-25%, 4 = 25-50%, 5 = > 50%.

Disease severity is expressed as:

$$P = \Sigma (n*v)/(v-1)N*100$$

P = disease severity (%)
N = total number of fruits
v = evaluation number: 0,1,2,3,4,5
n = number of fruits of each evaluation number

The investigations were made after harvest. For each variety, on average 280 fruits were chosen for the evaluation.

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Results

This investigation confirmed that harvest date strongly influence the disease severity (see figure 1).

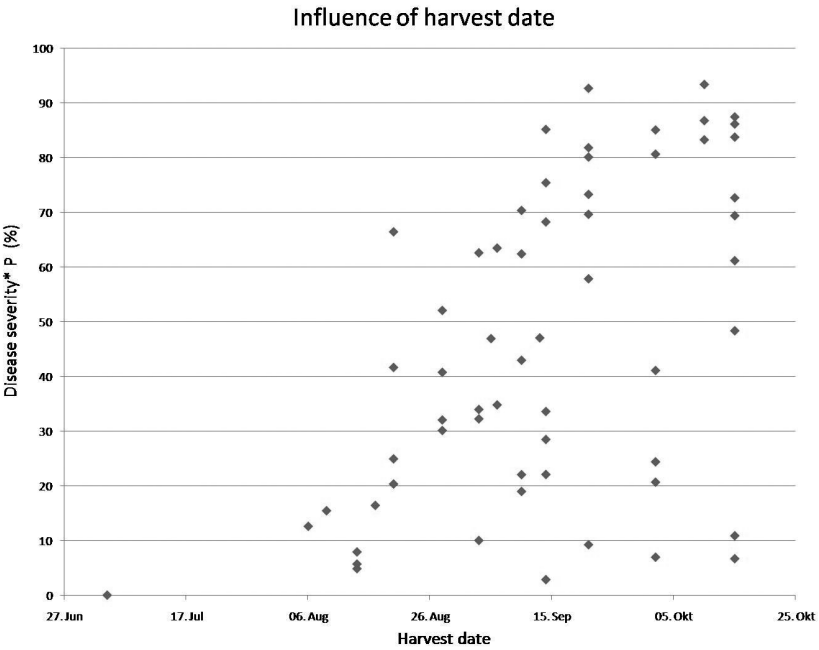

Fig. 1: Influence of harvest date to sooty blotch, 2007

Apart from this parameter the investigation shows an influence of the cross parents of new varieties.

Cultivars with Topaz as one parent were much more sensitive to sooty blotch than varieties with Florina as a cross partner (see figure 2).

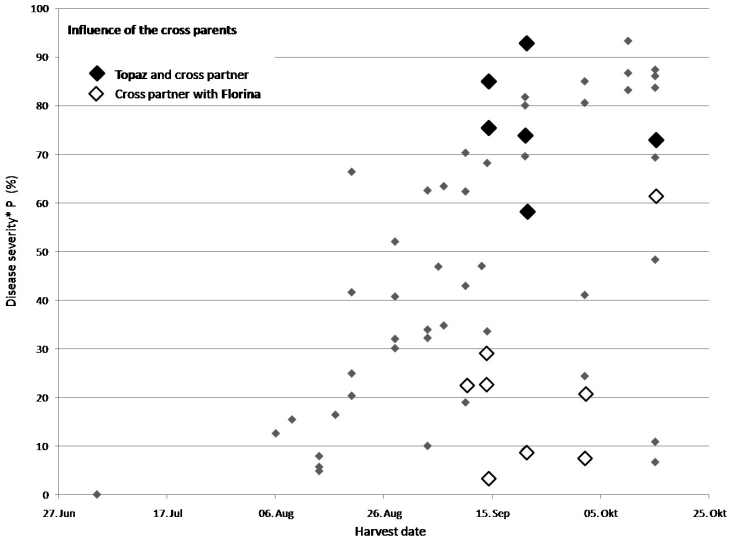

Fig. 2: Influence of the cross parents to sooty blotch, 2007

Discussion

Among apple varieties there are differences in sooty blotch severity. The reason is currently unknown. Studies from the USA (Belding, Sutton, 2000) support the hypothesis that the fungi obtain their nutrients not from components of the surface (cuticular wax), but more likely from fruit leachates (apple juice). Therefore the cuticular permeability is essential. Against this background further investigations with Topaz and Florina, as two opposite cultivars concerning their sensibility to sooty blotch, are necessary.

References

Belding, R.; Sutton, T. et al. (2000): Relationship between apple fruit epicuticular wax and growth of *Peltaster fructicola* and *Leptodontium elatius*, two fungi that cause sooty blotch disease; Plant Disease 07/00