

## SUSCEPTIBILITY OF PEACH – NECTARINE CULTIVARS ON BROWN ROT INFECTIONS

Rubos A.\*, Thomidis T.\*, Tsipouridis C.\*\*, Navrozidis E.\*, Michailidou O.\*

\*Technological Education Institute of Thessaloniki, arubos@cp.teithe.gr

\*\*Pomology Institute Naoussa (NAGREF), Greece

### Abstract

*One of the important factors for decision-making in plant protection is cultivar susceptibility to diseases, which have been incorporated into decision-support systems (DSSs). The main aim of this study was to investigate the susceptibility of 24 peach – nectarine cultivars on Brown Rot (shoot blights) natural infections.*

*The results showed that there were significant differences in the level of susceptibility of peach – nectarine cultivars on Brown Rot. The cultivars Tasty Free, Venus and Fantasia were the most susceptible on Brown rot, while the cultivars S. Sun Glo, IB42, M. Bianca and Cal 2000 were the least. The highest level of susceptibility on Leaf Curl was showed from the cultivars IB42.*

*Because a relational database containing disease susceptibility data together with other important cultivar characteristics, the results of this study should be incorporated into the decision-support system.*

**Key words:** brown rot infections,

### INTRODUCTION

A relational database containing disease susceptibility data together with other important cultivar characteristics should be incorporated into the decision-support system. In addition, using of resistant trees is the most important available method of controlling because the growers need not expend funds for extraneous control measures such as fungicides. Even where fungicides must be used, resistance is a useful complementary control measure.

The main aim of this study was to investigate the susceptibility of 24 peach – nectarine cultivars on Brown Rot natural infections.

### MATERIALS AND METHODS

All peach – nectarine commercial cultivars examined (Table 3) were established (grafted in the peach rootstock GF677 (a hybrid of *P. persica* x *P. amygdalus*)) in the experimental field of the Pomology Intitute, Naoussa Greece. There were 6 replicated trees for each cultivar. Studies were performed during 2006 - 2008. The trees were planted in 1998, on a silt-clay-loam soil, alkaline (pH 7.5) with natural medium fertility and favorable

physical and chemical conditions for water and nutrients retention and distribution. The trees were spaced at 4.0 x 4.5 m. *Monilinia* infection was evaluated annually. Results were collected by recording the number of blighted shoots (Pic. 1) per tree.

To test significant differences between treatments and interactions, the Generalized Linear Models (Wald Chi- Square) were applied at  $P=0.05$ .

## RESULTS

The results showed that the cultivar 'Tasty Free' was the most susceptible of all tested (Table 1). High level of susceptibility were also found in the cultivars 'Venus' and 'Fantasia'. The cultivars 'Romea' and 'Catherine' had higher number of blighted shoots than 'Fantasia' and 'Venus', but less than 'Loadel' and 'Fortuna'. No significant difference was found between 'Loadel' and 'Fortuna'. Similar level of susceptibility was showed the cultivars 'Fortuna', 'Spring Belle' and 'A37'. No significant difference was also found among the cultivars 'Spring Belle', 'A37', 'Kakamas', 'E.M. Crest', 'Red Haven', 'Fire Blight', 'E-45', 'H.d. Hale', 'Everst', 'Spring Crest' and 'Andross'. In addition, the cultivars 'Kakamas', 'E.M. Crest', 'Red Haven', 'Fire Blight', 'E-45', 'H.d. Hale', 'Everst', 'Spring Crest', 'Andross' and 'June Gold' had similar number of blighted shoots. The cultivars 'Fire Blight', 'E-45', 'H.d. Hale', 'Everst', 'Spring Crest', 'Andross', 'June Gold', 'Sunglo', 'Crest Haven', 'IB 42', 'Maria Bianca' and 'Caltesse 2000' showed similar level of susceptibility on *Monilinia*, which was the lowest of all cultivars tested.

## DISCUSSION

Improvement of disease forecast models can be improved by incorporating some other factors such as cultivar sensitivity (Safran and Levy 1995). According to Rogers and Stevenson (2006) host susceptibility of carrot plants affected the efficacy of weather-based spray programs, resulting in longer spray intervals and fewer fungicide applications on the resistant cultivar Bolero when compared with the susceptible cultivar Fontana.

*Table 1*

Susceptibility of 24 peach – nectarine cultivars on development of blossom blight caused from fungi of genus *Monilinia*

Cultivars	Percentage of Blighted Shoots	
<b>Tasty Free (n)</b>	34.9	a <sup>z</sup>
<b>Venus (n)</b>	27.5	b
<b>Fantasia (n)</b>	23.8	b
<b>Romea (p)</b>	16.1	c
<b>Catherine (p)</b>	15.5	c
<b>Loadel (p)</b>	11.3	d
<b>Fortuna (p)</b>	9.1	de
<b>Spring Belle (p)</b>	7.7	ef
<b>A37 (p)</b>	7.5	ef
<b>Kakamas (n)</b>	6.5	fg
<b>E.M. Crest (p)</b>	6.1	fg
<b>Red Haven (p)</b>	5.8	fg
<b>Fire Bright (n)</b>	4.6	fgj
<b>E-45 (p)</b>	4.5	fgj
<b>H.d. Hale (p)</b>	4.5	fgj
<b>Everts (p)</b>	4.3	fgj
<b>Spring Crest (p)</b>	4.2	fgj
<b>Andross (p)</b>	4.0	fgj
<b>June Gold (p)</b>	3.8	gj
<b>Sunglo (p)</b>	3.3	j
<b>Crest Haven (p)</b>	2.8	j
<b>IB42 (n)</b>	2.5	j
<b>M. Bianca (p)</b>	2.2	j
<b>Caltesse 2000 (n)</b>	1.8	j

<sup>y</sup>Values are the mean of three years (years effect was not significant ( $P=0.002$ )). Estimates are based on 6 replicates.

<sup>z</sup>Values in the same column followed by different letters are significantly different ( $P < 0.05$ ) according to Wald Test.

This study showed that the peach – nectarine cultivars had different level of susceptibility on blossom blights caused from fungi of genus *Monilinia*. Similarly, Corazza (1983) tested the susceptibility of peach cultivars on blossom blight and found differences with the earliest peach blooming cultivars 'Camden', 'Favorita Morettini III', 'Springtime' showed

the highest susceptibility, while the nectarine 'Nectared 3' seemed to be the most resistant. Bassi *et al.* (1998) also found different level of susceptibility of peach cultivars on fruit rots caused by *M. laxa*. In other studies, Wagner *et al.* (2005) did not find a correlation between percentage of infected flowers of 27 peach cultivars and selections and the average percentage of fruit surface area infected by *M. fructicola*, or between percentages of infected flowers and fruit.

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