RESISTANCE LINES OF SNAP BEAN TO FUSARIAUM WILT (*Fusarium oxysporum* f. sp. *phaseoli*)

Eli Carlos de Oliveira  
*Universidade Estadual de Londrina*

Guilherme R. Gomes  
*Universidade Estadual de Londrina*

Luiz Henrique Campos de Almeida  
*Universidade Estadual de Londrina*, caluizhenrique@msn.com

Paulo Augusto Campos Bassoli  
*Universidade Estadual de Londrina*

Leticia Verônica de Oliveira  
*Universidade Estadual de Londrina*

*See next page for additional authors*

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RESISTANCE LINES OF SNAP BEAN TO FUSARIUM WILT
(Fusarium oxysporum f. sp. phaseoli)


State University of Londrina, UEL, Londrina, Brazil

INTRODUCTION
The genus Phaseolus is attacked by soil fungus, Fusarium oxysporum f. sp. Phaseol, which causes wilt or yellowing (Nunes, 2003), and once introduced to crops, has its most viable and effective control with the use of resistant cultivars (Sartorato & Rava, 1994). Considering that obtaining disease-resistant cultivars is one of the most efficient ways to avoid considerable losses of productivity (Pereira & Ribeiro, 2012), this work aimed to evaluate the performance of snap bean of determined growth as resistance to Fusarium Oxysporum f. sp. Phaseoli during the development of plants.

MATERIAL AND METHODS
Four strains of bean pods of determined growth habit were evaluated, using as a control the cultivar UEL 1. The sowing occurred on 04/03/2011, with five seeds per pot. For sowing, ceramic vessels with a capacity of five liters were used, with spacing of 0.1 m x 0.6 m between vessels. The soil used consisted of a clay soil with a clay texture, corrected through the formulated fertilizer 08-28-16 at the dose of 0.05 kg per pot. After the emergency, thinning was performed, maintaining one plant per pot. In the preparation of the inoculum the modified methodology of inoculation with colonized sorghum grains was used (Gasperi, 2000; Klingelfuss et al., 2002). Following the methodology, maize grains colonized with Fusarium were used for inoculation of the bean-pod strains, performed on 01/04/2011, when the plant reached the V4 development stage. In this procedure, two colonies of corn colonized on the substrate of each vessel were introduced. At the end of the crop cycle the yellowing symptoms caused by Fusarium were evaluated, and there were no lesions in the plant colon. In this evaluation, grades were assigned according to Gasperi's methodology (2000): resistant 0-1.0; Moderately resistant 1.1-1.5; Moderately susceptible 1.6-2.0; Susceptible 2.1-2.5 and highly susceptible 2.6-3.0. In the harvest performed on 06/05/2011, pods, roots and aerial part of the plants were weighed. The experimental design was completely randomized, in a 5x2 factorial scheme (five lines and two treatments, inoculated with Fusarium and without inoculation), with four replications. The data were submitted to analysis of variance and the means of the treatments compared by the Tukey test at 5% probability.

RESULTS AND DISCUSSION
As expected, there was a significant difference between the treatments in the severity question, being the treatment that did not receive inoculation, superior, compared to all inoculated lines. As for the latter, it is noted that the HAV 8 line obtained the highest mean severity, statistically considered to be the worst among the lineages and taking into account the scale of notes adopted in this study, was considered susceptible. The HAV 11 and HAV 21 strains obtained statistically similar results and were classified as moderately resistant. On the other hand, the HAV 34 and UEL 1 (control) strains obtained the best results regarding the analyzed item, being classified as resistant to Fusarium wilt, as shown in table 1. The susceptibility or resistance of (Table 1). In the present study, the pathogenic and pathogenic
interactions of pathogenic and pathogenic pathogens (Simão et al., 2010) were observed in all inoculated strains, with emphasis on the UEL-1 control and the HAV 8 and HAV 34, which, although originating from the same region, were shown to be opposite in terms of disease resistance, with HAV 8 being classified as susceptible and HAV 34 and UEL-1 as resistant. The results obtained in this work, in which different levels of resistance of lines from the same region were observed.

Table 1. Notes and degrees of resistance attributed to the roots of the bean lineages inoculated with \textit{Fusarium oxysporum} f. sp. \textit{Phaseoli}, based on the scale adapted from Gasperi (2000).

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Notes of symptoms</th>
<th>Degree of resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAV 8</td>
<td>2,525</td>
<td>Susceptible</td>
</tr>
<tr>
<td>HAV 11</td>
<td>1,575</td>
<td>Moderately susceptible</td>
</tr>
<tr>
<td>HAV 21</td>
<td>1,3</td>
<td>Moderately tough</td>
</tr>
<tr>
<td>HAV 34</td>
<td>0,425</td>
<td>Resistant</td>
</tr>
<tr>
<td>UEL1</td>
<td>0,425</td>
<td>Resistant</td>
</tr>
</tbody>
</table>

CONCLUSION

The snap bean strains showed differences regarding resistance to \textit{Fusarium oxysporum} f. sp. \textit{Phaseoli}, with UEL-1 and HAV 34 being considered resistant. Because resistance is a characteristic of high heritability, it is possible to succeed in a breeding program for selection of resistant plants.

REFERENCES


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