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## DEVELOPMENT AND FITNESS OF *Spodoptera cosmioides* (WALKER) (LEPIDOPTERA: NOCTUIDAE) ON *Phaseolus vulgaris* L. GENOTYPES

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### INTRODUCTION

The black armyworm *Spodoptera cosmioides* (Walker, 1858) (Lepidoptera: Noctuidae), is widely distributed in South America, except for southern Argentina, Chile, and regions located to the west of the Andes in Peru (SILVAIN, LALANNE -CASSOU, 1997). In Brazil, this specie has occurred in several crops, including soybean, cotton and bean, causing injuries on leafs and pods that result in substantial losses in the plant yield (SPECHT et al., 2004).

Thus, Host-Plant Resistance becomes an alternative method as a strategy in the control of this pest, since resistance features expressed by some plants can cause changes in the behavior, and / or biology of phytophagous insects, or provide greater support capacity to their attack (BOIÇA JÚNIOR et al., 2013). Therefore, the aim of this study was to evaluate the development and fitness of *S. cosmioides* larvae fed on bean genotypes.

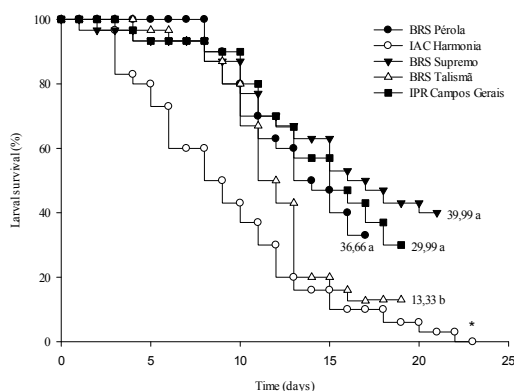
### MATERIAL E METHODS

Bean genotypes used were BRS Pérola, IAC Harmonia, BRS Supremo, BRS Talisman and IPR Campos Gerais. The leaves of the genotypes (treatments) were individualized into 9-cm-diameter Petri dishes lined with deionized water moistened filter paper. In each plate, a newly hatched larvae of *S. cosmioides* was released. Experiment was carried out under a completely randomized design with 30 replications. Data on larval stage duration, larval survival and larval weight of *S. cosmioides* were recorded. In addition, the larval performance of *S. cosmioides* was observed by calculating the Fitness Index (FI), adapted from Boregas et al. (2013), using the formula:  $FI = \text{larval survival (\%)} \times \text{pupal biomass (mg)} / \text{larval development period (days)} / 10$ .

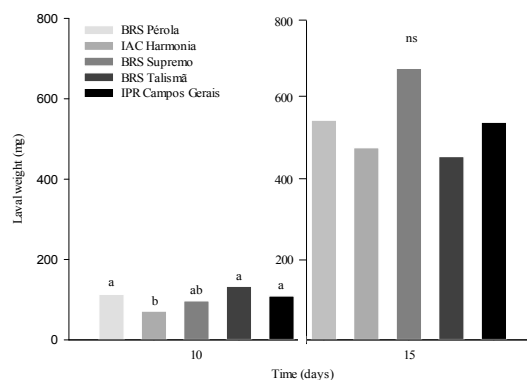
Larval development data were analyzed for residuals normality and variance homogeneity, and when necessary, were transformed to meet the assumptions of analysis of variance (ANOVA). Then, data were submitted to ANOVA (unidirectional ANOVA), and when significant, the means of treatments were compared by Tukey's test ( $\alpha = 0.05$ ).

### RESULTS AND DISCUSSION

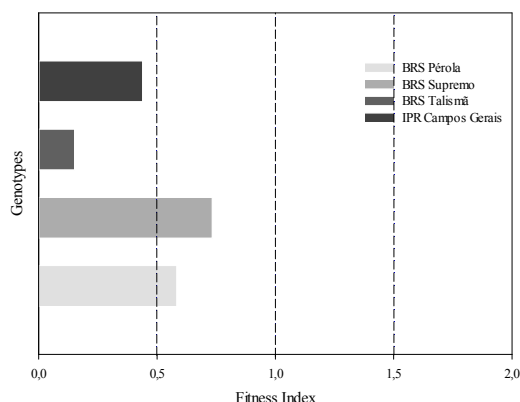
There were significant differences on survival and larval weight at 10 days, and fitness index of *S. cosmioides* among bean genotypes evaluated. The highest survival was observed in larvae fed on the genotypes BRS Supremo, BRS Pérola and IPR Campos Gerais, in relation to the genotype BRS Talismã. There was total mortality of the larvae that fed on IAC Harmonia genotypes (Figure 1). Similar results obtained by Morando (2015) and Santos (2015) showed that the IAC Harmonia genotype presented resistance features to *Chrysodeixis inculdens* and *Spodoptera frugiperda* (Lepidoptera: Noctuidae), respectively.



**Figure 1.** Survival curve ( $\pm$ SE) of *Spodoptera cosmioides* larvae fed with bean genotypes. Different lowercase letters indicate significant difference by the Tukey test ( $P < 0.0001$ ;  $F = 18,32$ ;  $SE = 9,16$ ). \*Data not analyzed due to total insect mortality.



**Figure 2.** Average larval weight ( $\pm$ SE) of *Spodoptera cosmioides* fed with bean genotypes at 10 and 15 days. Bars topped with different lowercase letters indicate significant difference by the Tukey test ( $P = 0.0006$ ;  $F = 5,58$ ;  $SE = 5,28$ ). <sup>ns</sup> No significant difference by the Tukey test ( $P = 0.8210$ ;  $F = 0,38$ ;  $SE = 54,23$ ).



**Figure 3.** Fitness index of *Spodoptera cosmioides* larvae fed with bean genotypes.

Regarding larval weight (Figure 2), there were significant differences only at 10 days after larvae hatching. Genotypes BRS Supremo, BRS Pérola and IPR Campos Gerais, provided greater *S. cosmioides* weight in relation to genotypes IAC Harmonia and BRS Talismã. The fitness index that demonstrates the host adequacy level for the evaluated population, was considered low ( $<1.0$ ) for *S. cosmioides* in all bean genotypes used in this experiment (Figure 3). The results found herein demonstrate that bean genotypes evaluated show resistance features in the antibiosis category and provided low fitness level to *S. cosmioides*.

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