

## Soybean Plants under Water Stress Modify the Proteolytic Activity

### *Anticarsia gemmatalis*

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**INTRODUCTION:** The water deficit is a major abiotic stresses which can cause damage to the growth and development of soybean plant, and can also adversely affect the development of many insects as *Anticarsia gemmatalis*, a major defoliating pests of the crop. **OBJECTIVE:** The aim of this work was to evaluate the impact that has soybean plants subjected to water stress on the proteolytic activity of the caterpillar *A. gemmatalis*. **MATERIAL AND METHODS:** UFV-16 soybean cultivar was subjected to water deficit. Water potentials ( $\Psi_{am}$ ) for each treatment were -0.18 MPa (control); -0.6 MPa; -1.0 MPa; and -1.6 MPa. The treatments consisted of 5 repetitions (plants under caterpillars attack), 2 larvae per plant/ 24h. Trypsin-like activity was determined from the digestive tracts of *A. gemmatalis* using the substrates L-BApNA and L-TAME. Also, was determined using the total proteases Azocasein substrate and the total protein using Bradford methodology. All enzyme activities and total protein were determined by spectrophotometry. **RESULTS AND DISCUSSION:** There was change in the total protease activity in the gut of caterpillars *A. gemmatalis* against the potential water stress the cultivar UFV-16. Finding statistical differences between CL -0.18 and CL -0.6 treatments and CL -1.6 ( $P < 0.05$ ). The activity of trypsin-like amidolytic and esterase decreased when was increasing water stress in plants. The total protein concentration in the gut extract caterpillars *A. gemmatalis* was increasing due to drought stress. The protein concentration showed a significant statistical difference between the extreme treatments, CL -1.6 and CL -0.18 ( $P < 0.05$ ). **CONCLUSIONS:** The UFV-16 cultivar, by increasing water stress, responds to the attack of the soybean-caterpillar to interfere with the proteolytic activity of your gut. The reduction of proteolytic enzymes implies low digestibility of the protein source. With low availability of aminoacids, the larvae may have changes in its life cycle leading to death.

**Key words:** Digestive enzymes, Trypsine-like, hydric stress

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