

Thigmomorphogenesis and its Interaction with Gravity in Climbing Plants of *Epipremnum aureum**

Benjamin Steinitz¹, Amir Hagiladi², Dalia Anav²

¹ Department of Plant Genetics and

² Department of Ornamental Horticulture, Agricultural Research Organization, The Volcani Center, P.O.B. 6, Bet Dagan 50 250, Israel.

*(request for reprints: Steinitz@volcani.agri.gov.il)

Summary

The touch-mediated increase in the leaf lamina area of climbing *Epipremnum aureum* (Linden and André) Bunt. plants was characterized. The touch stimulation was provided by coupling plant internodes to a support, whereas hanging plants were regarded as mechanically unstimulated controls. We show that the thigmosensitive region is located in the youngest internode and is restricted to the stem flank facing the support's surface. i.e., the flank which forms adventitious aerial clasping roots. Further, two different interactions between the gravity- and the mechanical-sensing response systems were found: (i) The touch-mediated promotion of leaf size was best expressed in upwards-oriented stems and was completely absent in horizontally oriented stems. Thus, the gravitational vector dictates permissive or non-permissive conditions for expression of the response to the touch stimulus. (ii) In down-hanging stems, the negative gravitropic curvature response of the shoot apex was too weak to prevent downward growth. However, touch stimulation of the apex induced a negative gravitropic tip curvature response sufficiently strong to invert the stem growth to an opposite direction of the gravity vector. Hence, the touch signal alters the expression of the apex's response to gravity.

Key words: *Epipremnum aureum* (Linden and Andre' Bunt.), Araceae, climbing plants, gravity, mechanical stimulation, thigmomorphogenesis.