
Influence of silicon in plant – insect interactions: Evidence from Lepidoptera stem borers

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Résumé

Silicon (Si) is among the most abundant elements on earth's crust with many roles in plants. Although in higher plants, most of the chemical defense systems are conferred by plant secondary metabolites, the monocotyledons, particularly grasses, which usually contain much lower levels of secondary metabolites than the dicotyledons, may in addition depend on other mechanisms such as silicon (Si)-based defenses. Silicon accumulated in grasses mediate plant resistance to insect herbivores, particularly to chewing insects, through the enhancement of plant phytoliths, which provide a mechanical barrier to feeding. This presentation gives a summary of the research studies done during the last five years at *icipe* (International Centre of Insect Physiology and Ecology, Nairobi, Kenya) to determine the influence of Si in plant-Lepidoptera stem borers' interactions. Our results indicated that Si mediates maize plant resistance to Lepidoptera stem borers through formation of a Si barrier that physically interferes with caterpillar feeding and/or plant penetration, thus significantly interfering with the larval performance. However, such Si-based influence varies according to several factors including the stem borer species, the soil type and the environmental conditions. This partly, explains the current geographic distribution of the main Lepidoptera stem borer's pests of maize in the East African Mountains.

Mots-Clés: defense, herbivory, Africa

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