

THE RESPONSE OF PLANTS TO WOUNDING

Summary

Plants during life are exposed to different abiotic and biotic stress factors. Both of them can induce wounding of a plant body. Responses to mechanical damage are local or/and systemic and hence involve the transduction of wound signals to activate the expression of various genes. In plant responses to wounding the central role plays jasmonic acid and its derivatives, but other compounds, including the oligopeptide systemin, oligosaccharides, volatile organic compounds and phytohormones e. g. abscisic acid are also important. Additionally, physical factors such as hydraulic pressure or electrical pulses, have also been proposed as a crucial factors involved in wound signaling. These components of signaling pathways are controlled in time and space by highly complex regulatory networks modulated

by interactions with other signaling cascades in plants. They include reversible protein phosphorylation steps, calcium calmodulin-regulated events, and production of reactive oxygen species such as superoxide anion radical and hydrogen peroxide. Indeed, some of these components involved in transducing of wound signals also function in signaling of other plant defence responses, mainly in pathogen responses, suggesting that cross-talk events may regulate temporal and spatial activation of different defences. Understanding the ways in which wound signaling pathways are coordinated individually and in the context of the plants environment is crucial in the application of this knowledge to plants crop protection strategies.