MORPHOLOGICAL ASPECTS OF PETIOLE ELONGATION IN SUBMERGED *RUMEX* SPECIES

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Rumex species show a distinct zonation in river areas. This distribution is related to the flooding tolerance of the plant species. *Rumex crispus* and *R. palustris* occur in the low and frequently flooded parts of the flood plain and must have adapted to survival in these conditions. One of the adaptations in response to flooding is enhanced growth of the petioles. This elongation response, mediated by the gaseous plant hormone, ethylene, restores the contact between the leaves and the atmosphere. In these species the greatest elongation response was observed in the youngest petioles and those that developed during the flooding treatment. *Rumex acetosa*, a species that occurs on rarely flooded dykes and river levees, is unable to elongate its petioles in response to submergence and ethylene. In this species the growth of the youngest petioles is even inhibited by flooding. In *R. crispus* and *R. palustris* growth of the petiole under flooded conditions occurs over the whole length of the petiole. However, growth in the basal part of the petiole is mainly caused by cell elongation, whereas growth in the apical region is related to both cell expansion and increased cell division. In *R. acetosa* the inhibition of growth is manifest over the whole petiole. This restricted growth is related to inhibited cell elongation.

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OZONE-INDUCED CHANGES IN THE SUSCEPTIBILITY OF BEAN TO *BOTRYTIS CINEREA*

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Young plants (21 or 25 days old) of four *Phaseolus vulgaris* cultivars differing in O_3 sensitivity, were exposed to 0, 120, 180 and 270 $\mu g\ O_3\ m^{-3}$ for 8 h. One day after the fumigations were started, leaves were inoculated with conidia of *Botrytis cinerea* suspended in water or in a 62·5 mM KH_2PO_4 solution (Pi). The conidia in the Pi-solution caused lesions on healthy leaves whereas conidia suspended in water did not. The primary leaves of the O_3-sensitive cultivar, Pros, showed the highest level of visible injury after exposure to O_3, whereas those of the O_3-tolerant, Groffy, were much less affected. The trifoliate leaves of all cultivars were less sensitive to O_3 than the primary leaves. Visible injury increased with increased O_3 concentrations. In the presence of O_3-induced symptoms, the leaves of all cultivars showed lesions after inoculation with water-suspended conidia of *B. cinerea*. The increase in the number of lesions depended on the level of O_3 injury. The number of lesions on the primary leaves of cultivar Pros and of the slightly less O_3-sensitive cultivars, Stratego and Lit, also increased with increasing O_3 concentrations when these leaves were inoculated with conidia in Pi-solution. However, the primary leaves of the O_3-tolerant cultivar, Groffy, showed a decrease in Pi-stimulated infection after exposures to the lower O_3 concentrations. A similar decrease in infection was obtained on the O_3-tolerant trifoliate leaves. The results indicate that O_3 can influence the susceptibility of bean plants to *B. cinerea*. Both a stimulation and a reduction in the number