

**ETICHA, D., STAß, A., HORST, W.J. (2005): Cell-Wall Pectin and Its Degree of Methylation in the Maize Root-Apex: Significance for Genotypic Differences in Aluminium Resistance. *Plant Cell Env.* (in press).**

**Abstract**

Cell-wall (CW) pectin-content and its degree of methylation in root apices of selected maize cultivars were studied in relation to genotypic Al resistance. Maize cultivars differing in Al resistance were grown in nutrient solution treated with or without Al, and pectin content of the root tips was determined. Control plants did not differ in pectin content in the 5 mm root apex. Al treatment increased the pectin content of the root apex in all cultivars but more prominently in the Al-sensitive cultivars. Pectin and Al contents in 1 mm root sections decreased from the apex to the 3 – 4 mm zone. Pectin contents of the apical root sections were consistently higher although significantly different only in the 1 – 2 mm zone in the Al-sensitive cv Lixis. Al contents in most root sections were significantly higher in cv Lixis than in Al-resistant cv ATP-Y. Localization of pectins by immunofluorescence revealed that Al-sensitive cv. Lixis has a higher proportion of low-methylated pectin and thus a higher negativity of the cell wall than Al-resistant cv ATP-Y. This is in agreement with the higher Al content and Al sensitivity of cv Lixis. We conclude that differences in CW pectin and its degree of methylation contribute to genotypic differences in Al resistance in maize in addition to the release of organic acid anions previously reported.