

ABSTRACTS OF POSTERS

Waterlogging effects on *Salix viminalis*

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Willow is common in riparian zones that are frequently waterlogged. There is interest in fast-growing willow for biomass, and land that is subject to flooding may be suitable for this purpose. Accordingly, we have studied the ability of willow to withstand poorly aerated root environments under controlled conditions.

Rooted cuttings of *Salix viminalis* L. cv. Bowles Hybrid were grown in aerated or deoxygenated nutrient solution. They showed considerably reduced root growth when dissolved oxygen partial pressures were reduced from 21 kPa to 0–2 kPa. At below 1 kPa, adventitious roots extended at about one third the rate of aerated roots. Growth in dry mass was also curtailed. Root growth under these conditions could have been sustained either by oxygen transported to the roots internally from the shoot or by the root's ability to respire and grow without oxygen. These possibilities are being examined further.

Aerenchyma (internally interconnected gas-filled space) is the most likely pathway for oxygen transport to the roots, from aerial parts. Therefore roots were investigated for the presence or absence of aerenchyma. Roots of all treatments had similar amounts of aerenchyma (20–30% of the cortex). Aerenchyma formation in *Salix viminalis* therefore appears to be constitutive and is not induced by poorly aerated conditions, as happens in cereal roots such as wheat and maize. In the latter species, ethylene (ethene) is thought to be responsible for inducing aerenchyma by promoting lytic breakdown of cortical cells. To test whether ethylene is active in willow, silver nitrate, a well-known inhibitor of ethylene action was applied. Silver nitrate was toxic at concentrations of 0.05 mg l⁻¹ and above but did not inhibit aerenchyma formation at lower non-toxic concentrations. Ethylene therefore is unlikely to be involved in aerenchyma development.

A preliminary account of chromosome numbers in the *Salix* – section *Retusae*

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Salix serpyllifolia Scop., *S. retusa* L. and *S. kitaibeliana* Willd. differ almost only by quantitative features. The dwarf of the three, *S. serpyllifolia* has long been regarded