Resistance to the aphids Sitobion avenae and Rhopalosiphum padi in Gramineae in relation to hydroxamic acid levels

THACKRAY, D. J.

WRATTENT, S. D.

EDWARDS, P. J.

NIEMEYER, H. M.

Aribiotic resistance to the aphid Sitobion avenae was assessed in relation to levels of hydroxamic acids (Hx) in a wide genetic range of cultivars and species of Triticum. Within hexaploid and tetraploid Triticum material, total plant concentrations of Hx explained a significant proportion of the variation in intrinsic rate of increase (rm) of S. avenae. Significant correlations were also found between resistance to Rhopalosiphum padi and Hx levels. Although the concentrations of Hx in whole plants declined during seedling growth, concentrations of Hx in newly?emerging leaves remained high in plants of all ages, including in the emerging flag leaves of mature plants. When the mean relative growth rate of S. avenae over three days was used instead of rm and the control of environmental conditions was improved, a higher proportion of the variation in aphid performance was explained by Hx concentrations in six cultivars.