DIBOA in wild Poaceae: Sources of resistance to the Russian wheat aphid (Diuraphis noxia) and the greenbug (Schizaphis graminum)

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Hydroxamic acids are secondary metabolites typical of Poaceae that play a role in cereal resistance against pests and pathogens. The content of the hydroxamic acid aglucones DIBOA (2,4-dihydroxy-1,4-benzoxazin-3-one) and DIMBOA (2,4-dihydroxy-7-methoxy-1,4-benzoxazin-3-one) was evaluated in wild Poaceae belonging to the tribes Triticeae (genera Hordeum and Elymus) and Aveneae (genera Deschampsia and Phalaris). The concentration of DIBOA in seedling extracts of the wild barleys Hordeum chilense, H. brevisubulatum subsp. violaceum and H. bulbosum was negatively correlated with parameters related to performance of the cereal aphids Schizaphis graminum and Diuraphis noxia. The relevance of the results obtained for breeding programs aimed at increasing cereal resistance against aphids is discussed.