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PvLOX2 silencing in common bean roots impairs arbuscular mycorrhiza-induced resistance without affecting symbiosis establishment

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Abstract

The arbuscular mycorrhizal (AM) symbiosis is an intimate association between specific soil-borne fungi and the roots of most land plants. AM colonisation elicits an enhanced defence resistance against pathogens, known as mycorrhizal-induced resistance (MIR). This mechanism locally and systemically sensitises plant tissues to boost their basal defence response. Although a role for oxylipins in MIR has been proposed, it has not yet been experimentally confirmed. In this study, when the common bean (*Phaseolus vulgaris* L.) lipoxygenase *PvLOX2* was silenced in roots of composite plants, leaves of silenced plants lost their capacity to exhibit MIR against the foliar pathogen *Sclerotinia sclerotiorum*, even though they were colonised normally. *PvLOX6*, a LOX gene family member, is involved in JA biosynthesis in the common bean. Downregulation of *PvLOX2* and *PvLOX6* in leaves of *PvLOX2* root-silenced plants coincides with the loss of MIR, suggesting that these genes could be involved in the onset and spreading of the mycorrhiza-induced defence response.

Additional keywords: fungi, RNA silencing, systemic resistance.**BUY PDF \$25.00**

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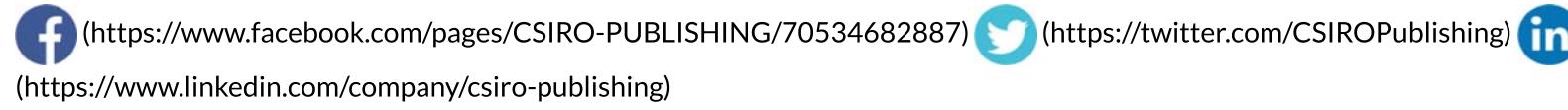
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