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Extended Abstract

Investigating New Methods to Increase Adventitious Root Formation †

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Modern agricultural improvements rely on the planting of elite crop lines to maximise the productivity of available agricultural land. Elite tree propagation is done through grafting selected scions onto available rootstocks; however in many species rootstocks are only available from seeds. Seed rootstock production requires land, water and other natural resources, as well as seasonal yield being reliant on weather and climate. Clonal rootstock propagation relies on efficient tissue culture protocols, however many tree crop species are bottlenecked at adventitious root formation. Finding new methods to increase adventitious root formation in plants will remove the need for field nurseries for rootstock production, taking us one step towards maximising yield from available agricultural land.

My research has focused on manipulating Auxin signalling pathways and Jasmonic acid recognition pathways, as both of these hormones are integral to adventitious root initiation and outgrowth. In my work I have identified two different chemicals that interfere with Auxin accumulation and degradation, increasing adventitious root formation in the model species *Arabidopsis*. I have also investigated applying exogenous dsRNA to temporarily silence negative regulators of adventitious root formation as a method to increase root formation in *Arabidopsis*.