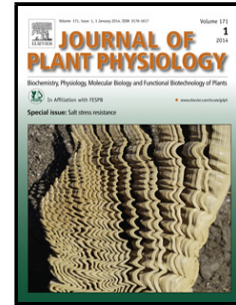


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Asparagine and sugars are both required to sustain secondary axis elongation after bud outgrowth in *Rosa hybrid*

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Summary

Nitrogen is required for optimal plant growth, especially in young organs such as secondary axes (axes II) after axillary bud outgrowth. Several studies have shown an increase of nitrogen concentration in xylem sap concomitantly with bud outgrowth, but the relation between nitrogen, sugars and plant hormones in axis II still remains unclear. We investigated in *Rosa hybrida* the involvement of nitrogen nutrition in axis II elongation in relation with sugars and cytokinins using ¹⁵N-labeled nitrate and sugars, amino acids and cytokinin quantifications. Besides, we measured the effect of the exogenous supply of these compounds on axis II elongation using *in vitro* excised bud culture. We demonstrated that nitrogen in the axis II comes mainly from new root uptake after decapitation. Asparagine, which concentration increases in sap exudates and tissues during axis II

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