Impact of nitrogen deficiency on plant growth and development: discovering conserved mechanisms for legumes and non-legumes

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Efficient nitrogen uptake and root development are crucial for robust plant growth and high crop yields. Small signalling molecules called CEP and CLE peptides play a vital role in regulating these processes. Produced in response to nitrogen availability or limitation, these peptides travel from roots to shoots, triggering responses that enhance nitrogen absorption and root structure.

In legume plants, the formation of nitrogen-fixing root nodules is carefully controlled by a negative feedback mechanism known as Autoregulation of Nodulation (AON) that is mediated by CLEs as well as positive feedback mediated by CEPs. However, the detailed molecular processes underlying these regulation remain unclear.

Here, we present overview and recent discovery of how plant peptide signalling modulate plant development in response to nitrogen availibility. Ultimately, this knowledge can contribute to developing crops with improved nitrogen efficiency and higher yields, addressing global food security challenges.

***References:***

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