



## **‘Rhizotraits’ for mitigation of soil nitrous oxide emission**

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The role of plant traits in driving components of the N cycle is poorly characterised. Here we demonstrate plant-derived C to regulate nitrous oxide (N<sub>2</sub>O) production and reduction in the rhizosphere. We use isotope (<sup>13</sup>C, <sup>14</sup>C and <sup>15</sup>N) techniques and a new isotope-FISH-FACS approach to verify (i) the link between plant-C and activity of microbial nitrate reducers, (ii) uptake of C compounds into pseudomonads, (iii) the role of both composite rhizodeposits and individual compounds in regulating the magnitude of N<sub>2</sub>O emission, and (iv) their influence on the N<sub>2</sub>O:N<sub>2</sub> product ratio. We examine the potential these relationships offer to use plants to manipulate the rhizosphere for reduction of N<sub>2</sub>O emissions and the possibility of characterising plant ‘rhizotraits’ that enhance reduction of N<sub>2</sub>O to N<sub>2</sub>.