

## Sources of N used for growth following defoliation in *Panicum maximum*<sup>1</sup>

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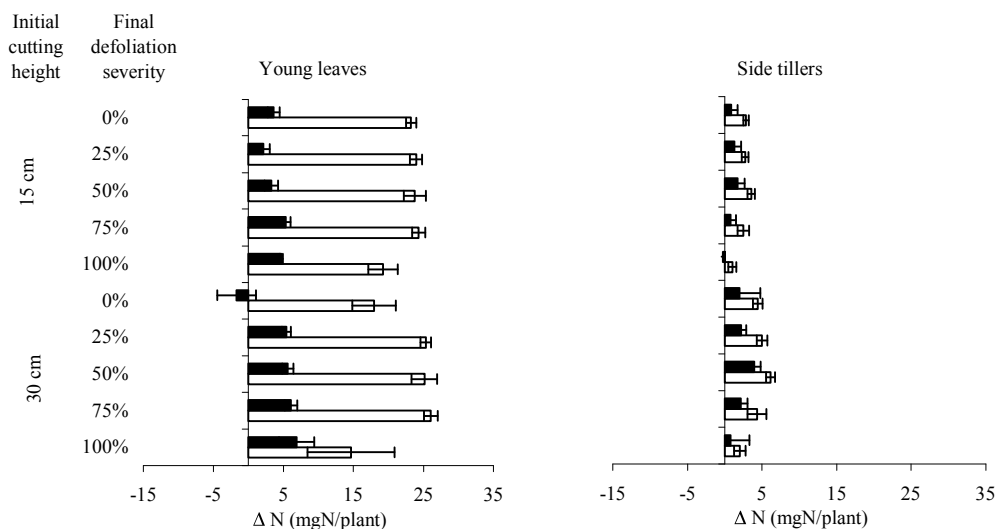
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**Introduction** The nitrogen (N) supplied to growing leaves from root uptake and mobilisation from senescing tissues may be reduced following defoliation. However, morphological adaptation of the shoot to prior defoliation occurs (Matthew *et al.*, 2002), which may affect the potential N supply from remaining leaves. This study determined the degree to which plants of *Panicum maximum* utilised current root uptake and mobilisation to supply N to growing leaves and side tillers following defoliation.

**Materials and methods** Plants were grown in sand culture supplied with a complete nutrient solution containing 1.5 mol.m<sup>-3</sup> NH<sub>4</sub>NO<sub>3</sub> and cut weekly for seven weeks to a height of either 15 or 30 cm. This established plants differing in shoot morphology. Eight weeks after the first cut, plants were defoliated for a final time to remove either 0, 25, 50, 75 or 100 % of the area of each individual leaf blade on the main tiller. Both immediately and one week after the final defoliation plants were harvested and separated into roots, stem, old leaves, young leaves and side tillers. <sup>15</sup>N tracer techniques were used to determine the degree to which defoliated *P. maximum* utilised current root uptake and mobilisation to supply N to growing leaves and side tillers

**Results** In most instances N was supplied to young leaves and side tillers from both mobilisation (unlabelled N) and current root uptake (labelled N). In all treatments for both young leaves and side tillers current root uptake supplied more N than mobilisation. Generally, the relative contribution of root uptake to the total N increase was greater in young leaves than in side tillers, indicating that the allocation pattern of mobilised N differed from that of N derived from current root uptake.



**Figure 1** Change in labelled (□) and unlabelled (■) N (mg/plant) of the young leaves and side tillers of *P. maximum* over a 7 day period following the final defoliation. Values are means ( $\pm$  SE) of 4

**Conclusions** In defoliated plants of *P. maximum*, the young leaves and side tillers obtained N from both root uptake and mobilisation. In all instances current root uptake was the major source of N. The allocation pattern of mobilised N differed from that of N derived from current root uptake.

### Reference

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