

Oral presentation

The effect of point of decapitation on lateral bud outgrowth and regrowth following two decapitations of *Moringa* seedlings grown in hydroponic culture

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Introduction. *Moringa* (*Moringa oleifera* Lam.) seedlings are repeatedly cutback to 15 cm when grown in intensive agroforestry production systems. Yet, little research has been devoted to the response of multipurpose trees to such frequent and severe vegetative harvest.

Objectives. The objectives of this study were to examine lateral bud release as a function of point of apical meristem decapitation and to determine if previously decapitated seedlings show enhanced lateral bud outgrowth compared to seedlings decapitated for the first time.

Methods. Greenhouse experiments were conducted at the State University of New York at Cobleskill, New York, USA during the summer of 2006 using seed collected from Uganda. Seedlings were grown using hydroponic culture at a pH of 5.5-6.0 and electrical conductivity levels of 2.0-2.3 dS/m-1.

Results. An outgrowth of lateral buds following decapitation was noted in hydroponically grown *Moringa* seedlings. This release of buds from apical dominance was repressible by applying exogenous auxin (5000 mg/L-1 IAA) to the cut surface of stumps of the decapitated seedlings. Dry weights increased with increasing acropetal nodal point of decapitation up to node 6 (15 cm). Decapitation to 30 cm (12 nodes), however, produced more than twice the dry weight compared with those decapitated to 40 cm (16 nodes). Pinching 5 or 10 cm of the apical stem resulted in little regrowth and low dry weights. Intact seedlings had significantly larger stem diameters (16 mm) than once-decapitated seedlings (12 mm) prior to the second decapitation. The number of lateral buds released decreased, and stem length and dry weights increased with increasing stem diameter. The rate of bud release for 30 once-decapitated (n=13) and twice-decapitated (n=17) seedlings having no significant difference in stem diameter was examined. Bud release of twice-decapitated plants (6.7/plant) was more than twice that of once-decapitated plants (2.7/plant).

Conclusion. The percentage of stem removed was more important than the actual height to which seedlings were decapitated in order to maximize regrowth of *Moringa* seedlings. Enhanced lateral bud response of previously decapitated seedlings was observed. The results of this study may be used to begin to develop a framework for understanding the response of *Moringa* seedlings to severe, repeated coppicing.

Keywords: agroforestry, apical dominance, auxin, *Moringa oleifera* Lam.

Selected References

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