



## Effects of water stress and mycorrhizas on rooting of stem cuttings of three dryland and semi-arid tropical tree species

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### ABSTRACT

**Objectives:** Some species in genus *Albizia* spp. are not easy to propagate through seeds, as on maturity their seeds are quickly damaged by insects. This work was aimed at studying the effects of water stress and mycorrhizas on propagation, through rooting leafy-stem cuttings of *Albizia gummifera*, *A. lebbeck* and *A. schimperiana*.

**Methodology and Results:** Seedlings of dryland species, *Albizia gummifera*, *A. lebbeck* and *A. schimperiana* were grown under water stressed or Non-water stressed conditions. Half of the seedlings in each of these treatments were further grown with or without mycorrhizas. All the three *Albizia* species so treated were propagated through rooting their single-node cuttings in a non-mist propagator. Cuttings from water-stressed seedlings had shorter durations in rooting and higher rooting percentages. All seedlings grown with live mycorrhizal inoculum were observed to have mycorrhizas. On planting, rooted cuttings from water-stressed, mycorrhizal seedlings, grew better. Stumps remaining after harvestings shoots for taking cuttings produced new coppice shoots.

**Conclusion and application of findings:** The *Albizia* spp. *A. gummifera*, *A. lebbeck* and *A. schimperiana*, have been mass propagated through rooting leafy-stem cuttings in a non-mist plant propagator. This method can be used to mass-propagate any other tree that cannot be easily propagated through seeds. The use of a non-mist plant propagator to mass-propagate plants can be said to be appropriate to grass-root communities. In that, the system does not require electricity or piped water. The better performance in rooting shown by the water-stressed *Albizia* seedlings could be an adaptation to survival in the semi-arid/dryland conditions. The same could be said on the better shoot height and dry weight of the planted rooted-cuttings obtained from water-stressed, mycorrhizal seedlings. Coppice shoots are known to behave just like seedlings. As such, they can be used to obtain leafy cuttings for rooting. Thus, mass-propagation of a tree species can be perpetuated through rooting of cuttings harvested from coppice shoots.

**Key words:** *Albizia*, water-stress, rooting cuttings, plant propagator, mycorrhizas, dryland, semi-arid