

INTERGENERIC GRAFTING OF MIMOSOIDEAE FORAGE SHRUB LEGUMES ONTO WOODY WEEDS FOR LANDSCAPE REHABILITATION

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Australia has enormous areas of its tropical rangelands infested with exotic Mimosoideae woody weeds, particularly *Acacia farnesiana* (Mimosa bush), *Acacia nilotica* (Prickly acacia) and *Prosopis* spp (Mesquite). These weeds are detrimental to the ecology, agricultural productivity and sustainability of the landscape. *Acacia nilotica* alone infests some 7 million ha of Queensland's vast Mitchell grass (*Astrebla* spp) biogeographic region. The economic impact on the grazing industry is about \$5million annually in lost production. In the semiarid environment of NW Queensland livestock endure long annual dry season droughts where both the quantity and quality of grass declines over the year reducing animal productivity. The merits of introducing pasture legumes into such a system are well known however none have been found to be adapted. The shrub legume *Leucaena* is regarded as the utmost forage shrub legume but it too is not adapted to this semiarid region. A solution to the woody weed problem and the annual protein droughts maybe the intergeneric grafting of Mimosoideae forage shrub legumes on to the root stocks of Mimosoideae species that are adapted to the region such as *A. farnesiana*, *A. nilotica*, *Prosopis pallida* and native acacia species. If successful a whole new valuable forage shrub industry in semiarid areas may develop, enhancing both livestock productivity and sustainability. A pilot study to investigate the intergeneric grafting of :

Leucaena leucocephala subspecies *glabrata* cv Tarramba scion on *A. farnesiana* rootstock

Leucaena leucocephala subspecies *glabrata* cv Tarramba scion on *A. nilotica* rootstock

Leucaena leucocephala subspecies *glabrata* cv Tarramba scion on *P. pallida* rootstock

The hybrid *Leucaena* KX2 scions on *A. nilotica* rootstock

The hybrid *Leucaena* KX2 scions on *P. pallida* rootstock

Seed of the woody weed species, *Leucaena* and cuttings from KX2 were grown in small pots in a shadehouse with overhead watering at James Cook University. The seedling *Leucaena* and woody weeds were then cleft grafted and grown in the shadehouse. To date a small number of *Leucaena* on *A. nilotica* and *Leucaena* on *Prosopis* have established grafts. Successful intergeneric grafting of woody species is uncommon and in the literature there appears to be no record of intergeneric grafting of forage shrub legumes on to woody weeds as attempted here. Some success with interspecific grafting of *Prosopis* spp. as well as *Leucaena* has however been reported. This pilot study indicates that the intergeneric grafting of *Leucaena* on to *A. nilotica* and *P. pallida* may be possible. The grafted plants are immature and as incompatibility can take years to develop it maybe some time before being certain of success. Only cleft grafting was attempted. Other methods should be explored, as well as other rootstocks particularly native acacia species and other scions e.g. *Calliandra* spp and *Desmanthus* spp. Intergeneric grafting of forage and adapted woody mimosoidea species may offer new valuable forage resources for the dry tropics and rehabilitation of woody weed landscapes.