

EFFECT OF *GLIRICIDIA SEPIUM* ON ESTABLISHMENT OF NATIVE TREE SPECIES AT KNUCKLES FOREST RESERVE, SRI LANKA

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The steep slopes covered with lower montane forests of the Knuckles Forest Reserve (KFR), were exploited for plantation of coffee and tea during the colonial era. At present, the lower montane forest patches on the eastern slopes are highly fragmented. These isolated forest patches are frequently interspersed with grasslands with poor regeneration potential. Reforestation of these grasslands using native tree species is difficult mainly due to harsh microclimatic conditions prevailing in them. Studies have shown that amelioration of microclimatic conditions by nurse plants facilitate the growth of target plant species in degraded lands. Therefore, we hypothesize that the use of *Gliricidia sepium* ((Jacq.) Kunth ex Walp.) as a nurse plant would facilitate the initial growth and establishment of native tree species in degraded grasslands at KFR. A field study was conducted using three different island sizes (4, 16 and 64 m²). One set of islands were planted with 2 m long *G. sepium* stakes at 2 m intervals in a grid format. The other set was planted without *G. sepium* (control). In all treatment and control islands, seedlings of *Macaranga indica* Wight, *Bhesa ceylanica* (Arn.) Ding Hou, *Symplocos cochinchinensis* (Lour.) S. Moore and *Eugenia bracteata* ((Willd.) Roxb ex DC.) were planted randomly at 1 m intervals. Survival, height, number of leaves per seedling in transplants and the survival, height and number of sprouts in *G. sepium* stakes were recorded.

After six months of establishment survival rates of *S. cochinchinensis* (14.06 %, P = 0.012, F = 12.79), *B. ceylanica* (15.62 %, P = 0.008, F = 15.00) and *M. indica* (12.62 %, P = 0.025, F = 8.76) were significantly different between the 8 m² islands with *G. sepium* than without *G. sepium*. Relative growth rate in height (RGR) of the four tree species in treatment and control islands were not significant after six months of establishment. However, RGR of *S. cochinchinensis*, *B. ceylanica* and *E. bracteata* were higher in 2 m² islands with *G. sepium* than without *G. sepium*. The higher survival and growth rates of native tree species under *G. sepium* at the initial stages of establishment is probably due to the amelioration effect of the microclimatic conditions by *G. sepium* in the grasslands. Our research indicates the potential use of *G. sepium* as an effective nurse plant in initial stages of reforestation efforts on highly degraded grasslands.

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