



## Persistence of *Chamaecrista rotundifolia* (Wynn) in *Panicum maximum* (Ntchisi) under Varying Spacing and Legume Planting Methods

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## Persistence of *Chamaecrista rotundifolia* (Wynn) in *Panicum maximum* (Ntchisi) under varying spacing and legume planting methods

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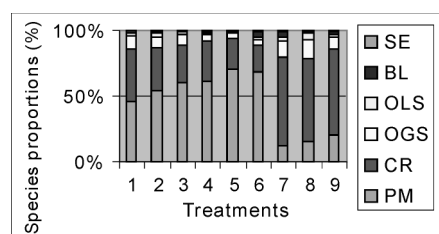
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**Key words:** *Chamaecrista rotundifolia*, persistence, grass-legume pasture, botanical composition, soil-seed stock

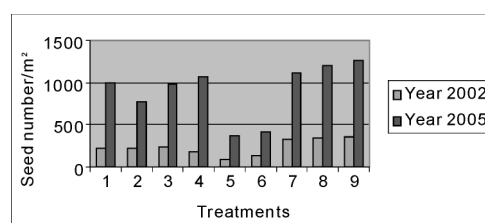
**Introduction** *Chamaecrista rotundifolia* cv. Wynn is reported to have the potential for production of grass-legume pastures (Tarawali, 1991; Peters *et al.*, 1994) but it performed comparatively much poorer than *Centrosema pubescens* and *Stylosanthes hamata* when they were planted with *Cynodon nlemfuensis* and *Brachiaria ruziziensis* in the moist savanna of West Africa (Olanite, *et al.*, 2004).

**Materials and methods** Nine pasture treatments were sown in July 2000 as a randomized complete block design with three replicates at the University of Agriculture Teaching and Research Farm, Abeokuta, Ogun State, Nigeria as follows: (i) *Panicum maximum* (1m × 1m)/*Chamaecrista rotundifolia* (drilled); (ii) *P. maximum* (0.75m × 0.5m)/*C. rotundifolia* (drilled); (iii) *P. maximum* (1m × 1m)/*C. rotundifolia* (broadcast); (iv) *P. maximum* (0.75m × 0.5m)/*C. rotundifolia* (broadcast); (v) Sole *P. maximum* (1m × 1m); (vi) Sole *P. maximum* (0.75m × 0.5m); (vii) Sole *C. rotundifolia* (drilled 1m × 1m); (viii) Sole *C. rotundifolia* (drilled 0.75m × 0.5m); (ix) Sole *C. rotundifolia* (broadcast). The botanical composition of the pastures was estimated in year 2005 and the soil-seed accretion of the legume was estimated in year 2002 and 2006 to determine persistence.

**Results and discussion** The proportion of *C. rotundifolia* in the grass/legume and the sole grass plots five years after planting (Figure 1) was between 26% and 43% showing that the legume has a rapid spread through the seed dispersed by explosive mechanism thereby colonizing the environment, an indication of good persistence especially in a taller grass species. The estimated soil-seed stock (Figure 2) for year 2005 was more than twice that for year 2002 for all the pasture treatments indicating that as the pastures became more mature the number of *C. rotundifolia* stands increased accordingly confirming earlier reports of the prolific seeding habit of the legume (Tarawali, 1991). This is an attribute for good persistence of the legume in the grass through seedling regeneration, especially since the seed also germinate spontaneously with adequate soil moisture.



**Figure 1** Botanical composition (%) of the *Panicum-Chamaecrista* plot in year 2005 five years after planting. SE= Sedges, BL= Brood Leaves, OLS= Other Legume, OGS= Other Grass Species, CR= *Chamaecrista rotundifolia*, PM= *Panicum maximum*.



**Figure 2** Estimated soil-seed stock (seed number/m<sup>2</sup>) for *Chamaecrista rotundifolia* planted in association with *P. maximum* in year 2002 and year 2005 two and five years after planting respectively.

**Conclusions** A legume species that would make significant contribution to grass-legume pasture production in south west Nigeria must be aggressive and have high resilience to be able to effectively compete with the tall growing bunch forming grasses that are common in the area. *C. rotundifolia* cv Wynn shows a good promise of persistence in *P. maximum* which is a major forage resource in the area.

### References

- Olanite, J. A., S. A. Tarawali and M. E. Akeñ Ova. 2004. Biomass yield, quality and acceptability of selected grass-legume mixtures in the moist savanna of West Africa. *Tropical Grasslands* 38 : 117-128.
- Peters, M, S. A. Tarawali and J. Alkaemper. 1994. Evaluation of tropical pasture legumes for fodder banks in sub-humid Nigeria. I. Accessions of *Centro bractianum*, *Centro pascurium*, *Chamaecrista rotundifolia* and *Stylo hamata*. *Tropical grasslands* 28 : 65-73.
- Tarawali, S. A. 1991. Preliminary agronomic evaluation of forage legumes for sub-humid West Africa. *Tropical Agriculture* (Trinidad) 68 : 88-94.