B-116 Agronomic performance and competitive abilities of two grass legume associations in the low country wet zone

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Agronomic performance and competitive abilities of *Pueraria phasioloides* (introduced accession - CIAT 18031) when grown in association with *Brachiaria brizantha* and *Brachiaria ruziziensis* were investigated in a field experiment.

It was found that *B. brizantha* had a higher dry matter yield (198g/m^2) in pure stand due to greater increase in quantity of stems. However, *B. ruziziensis* which had a higher leaf: stem ratio resulted in a higher dry matter yield (178 g/m^2) when grown under competition with the legume. Relative yield totals (RYT) are very close to 1 indicating both mixtures (*Brizantha* x *Puero* mixture = 1.01, *Ruzi* x *Puero* mixture = 1.04) have no resource complementarity i.e. they fully compete for the same limiting resources such as light, space, nutrients etc. *B. ruziziensis* had a higher ($p< 0.05$) relative yield (RYG=0.625), thus competiveness of the associated grass decreased the relative yield of the legume component (RYL = 0.43) in the mixture. However, there was no competitive enhancement or suppression for both species when *P. phasioloides* was grown in association with *B. brizantha* RYG = 0.48 and RYL = 0.54, respectively).

Quality of the herbage was greatly improved in the presence of legume. Increase in nitrogen content ($p <0.05$) of the grass component in mixed swards (*B. b* = 2.17% and *B.r* = 1.70%) was probably due to stimulation of the associated grass for soil mineral nitrogen through the legume. In spite of higher stem portions, *B. brizantha* had a higher nitrogen content ($p<0.05$) and nitrogen yield, both in pure stand (2.12% and 4.24 g/m^2 resp.) and in mixed sward (2.17% and 3.25 g/m^2 resp.) as compared to leafier *B. ruziziensis.* (1.35% and 2.34 g/m^2 for pure stand and 1.7% and 3.02 g/m^2 for mix sward resp.) This could be associated with the species characteristics.

Results indicate that, to maintain a better legume proportion in a mixed sward, and to obtain a higher nitrogen yield, association of *P. phasiolodes* and *B. brizantha* would be more suitable under low country wet zone conditions.