

Summary

The effect of root competition of *Andropogon gayanus* CIAT 621 plants on the seedling development of *Stylosanthes capitata* CIAT 1315 was evaluated under greenhouse conditions. Likewise the effect of fertilizer rates and grass defoliation on root competition was studied. The species were planted in pots containing 3.5 kg of Carimagua soil (pH 4.1, 2.8% organic matter, 1.5 ppm phosphorus, 0.36 meq/100 g calcium, 0.09 meq/100 g magnesium, 0.11 meq/100 g potassium, and 86% aluminum). Low (30 N, 21 P, 36 K, 44 S, 91 Ca, 36 Mg) and high (double the low amounts) fertilization rates (kg/ha) were used. Previous to the planting of *S. capitata*, different root competition levels of *A. gayanus* were applied throughout the 0, 2nd, 4th, 6th, and 8th week of growth of the grass. The grass defoliation treatments were applied by cutting the *A. gayanus* seedlings at the moment of planting *S. capitata*, repeating this procedure after 30 days. The treatments were applied in a complete factorial arrangement within a randomized complete block design with five repetitions.

During the experiment at weekly intervals the plant height and leaf number were measured. At the end of the experiment, sixty days after planting of *S. capitata*, total dry matter, dry matter aerial and root production were measured. Also the P, K,

and Ca uptake was determined. Regression analysis was used to study competition between the species.

Results of the experiment indicate that competition by *A. gayanus* plants on seedlings of *S. capitata* occurs principally at root level depressing the growth of the legume. Nevertheless, root competition is reduced by *A. gayanus* defoliation allowing for higher water and nutrient uptake by the legume. Likewise, the higher levels of fertilization reduced *A. gayanus* root competition.

At low production levels of root dry matter the defoliation of *A. gayanus* appears to have a synergistic effect on the *S. capitata* seedling. This indicates that the equilibrium of these potentially compatible species depends upon defoliation of the grass and availability of water and nutrients in the soil.