Establishment of Sustainable Signal Grass Pasture by Amendment of *Chromolaena odorata* Biomass and Manure as Nutrient Organic Source: Effect on growth parameters, dry matter production and carrying capacity.

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Abstract

In many tropical pastures invasive weed like Chromolaena odorata becomes a serious species with no redeeming feature and causes poor and low calving rates of local cattle. Utilization of C. odorata biomass as organic nutrient source may be an alternative management to eliminate the distribution of the weed and improve pasture productivity.

A field study in mini pastures was conducted to recognize annual forage production (AFP), carrying capacity, N- and P Uptake, and protein production of signal grass grown on soil amended with C. odorata biomass and feces as organic nutrient source. Block Randomized Design consisting of : no treatment (blank control = Pa); 7.2 kg plot^{-1} of C. odorata (PC); 21 kg plot^{-1} of manure (PF); combination of C. odorata (3.6 kg plot^{-1}) and manure (10.5 kg plot^{-1}) (PCF) and inorganic fertilizer (573.3 g urea plot^{-1} and 217 g super phosphate plot^{-1} (positive control=PA), with 4 replications. Carrying capacity was calculated according to simulotion of accumulate grass production throughout the year. Dried herbage was use to determine forage production, N-and P uptake. Protein production was calculoted from N concentration, 6.25 factor and forage production.

The results showed that PC improved ($p<0.01$) AFP about 225% and 110% as compared to P0 and PF, respectively. PC and PF are able to substitute inorganic fertilizer about 60% and 50%, respectively in resulting similar AFP as compared with those of PA. PC and both PF and PCF increased ($p<0.05$) carrying capacity of the pasture up to 1.7 and 1.3 Animal Unit, respectively as compared with P0. PC, PF and PCF produced higher protein production ($p<0.05$) than P0, and substituted to inorganic fertilizer by 46%, 40% and 49%, respectively.

Keywords: Brachiaria humidicola, Chromolaena odorata, manure,

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