

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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L. Abdullah¹⁾, and D. Puspitasari¹⁾

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 = P₀); 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 simulation of accumulate grass production throughout the year. Dried herbage was use to determine forage production, N-and P uptake. Protein production was calculated 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,*

1). Grassland Science and Management, Faculty of Animal Science, IPB, Jl. Agathis Kampus Darmaga 16680, lahduh@ipb.ac.id