

Growth and Yield Performance of Promising Napier Grass Accessions as Affected by the Frequency of Chicken Manure Application

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Abstract

The study compared the effect of single and split chicken manure (CM) application on the growth and yield of promising napier grass accessions, identified the high yielding napier grass accession, and compared the cost benefit ratio of producing napier grass. Three frequencies of chicken manure application - zero, single, and split - were used in fertilizing seven promising accessions of napier grass. The frequencies of fertilizer application were randomly distributed to three horizontal strips while the accessions were randomly distributed to seven vertical strips using the Strip-plot design. Each plot measured 3 m x 4 m.

Results showed that frequency of CM application significantly affected the number of days to shoot emergence, the number of tiller produced, height and dry herbage yield of napier grasses. Grasses with single or split CM application produced new shoots earlier and had more tillers than those with zero manure application. Grasses with split CM application were taller and produced higher total dry matter yield than those with single or zero application. In terms of dry matter yield, grasses applied with split manure application (10.13 t ha^{-1}) produced significantly ($P \leq 0.05$) higher dry matter herbage yield than those with single application (7.44 t ha^{-1}) during the wet season of the first year observation period. However, grasses with either single or split manure application produced comparable dry herbage yields with the unfertilized grasses during dry season. In the second year of observation period, grasses either single (6.98 t ha^{-1}) or split (6.35 t ha^{-1}) produced significantly more dry herbage yield than the unfertilized grasses (2.93 t ha^{-1}). Based on the mean yearly dry herbage yield, grasses with split manure application produced the highest total dry matter herbage yield per year of 12.11 t ha^{-1} while only 6.24 t ha^{-1} for the grasses with zero manure application.

In terms of napier grass accessions, no differences were observed on the number of days to shoot emergence and total dry herbage yield. However, Ex Indonesia produced the highest dry herbage yield and Miniero produced the lowest dry herbage yield.

The marginal benefit cost ratio 3.29. of split over single CM application, implies that the former is better than the latter. However, any of the accessions could be used because they have comparable herbage yield.

Keywords: *napier grass, accessions, chicken manure application*