INTRODUCTION

Low productivity levels plague the profitability of ruminant animal production sector in tropical Africa (Ojo et al. 2014). This is due to an over-reliance on forages from the natural pasture which is affected by seasonal fluctuations that worsens during the dry season (Babayemi and Bamikole 2006). The deliberate cultivation and management of forage crops is a plausible solutions, as it would allow the intended ruminant forage consumption target to be measured against the forage production volume and needed land area for cultivation. Given this, selecting high yielding, quality, persistent, and perennial forages would ensure the supply of forages for livestock consumption which is a sustainable practice (Ojo et al. 2014).

Pennisetum purpureum is a high yielding forage grass that is well adapted to the tropical climate. Several genetic improvements have been made to the grass, and some varieties have emerged as part of a conscious breeding effort to improve the yield of the grass (Maleko et al. 2019). The evaluation of these varieties is quintessential for the selection of candidate varieties that would be recommended for production. For this reason, this study evaluated the morphogenesis and yield of three P. purpureum varieties grown under similar environmental conditions.

MATERIALS AND METHODS

The experiment was carried out at Federal University of Agriculture, Abeokuta, Ogun State, Nigeria. Three P. purpureum varieties (local, purple, and F1) were used in this study. The P. purpureum varieties were planted using vegetative stem cuttings in July 2019. The stem cuttings were planted on plots measuring 4 m x 5 m with a 1 m spacing between and within rows. Soil analysis revealed a low soil N content, and 4 t/ha of dried poultry manure (equivalent to 120 kg N/ha) was applied in split dosage (2 weeks before planting and 3 weeks after planting).

The experiment was laid out as a Randomized Complete Block Design with the three varieties considered as factors replicated four times per block, for a total of 6 blocks.

Plant morphogenic traits were measured in a destructive bi-weekly sequence for 12 weeks, because, dry matter determination was done immediately after morphogenic trait measurement. The plant elongation rate, leaf elongation rate, leaf expansion rate, leaf appearance rate, and tiller appearance rate were estimated from the initial and final recorded values of the plant height (cm), leaf length (cm), leaf width (cm), number of leaves, and number of tillers. Data collected were analysed using a two-way analysis of variance (variety and block effects), and where there were significant differences between the varieties, the Tukey HSD was used to separate the means.

RESULTS

The morphogenic plant traits differed significantly (p<0.05) between the varieties, except the tiller appearance rate which was similar (p>0.05) when the varieties were compared (Figure 1). The purple variety had the least plant elongation and leaf appearance rate values. For both traits, the F1 hybrid and local variety had similar trait values; however, the F1 variety had the least leaf elongation rate value and the highest leaf expansion rate value. On the other hand, the local and purple variety had comparable higher leaf elongation rate and leaf expansion rate values. The purple variety had significantly (p<0.05) higher dry matter yield at the 6th and 8th week, but at the 10th and 12th week, the local variety produced the highest dry matter yield.

CONCLUSION

The varieties had distinct morphogenic traits. Also, while the purple variety produced higher dry matter yield at the early stages of growth, dry matter production was higher for the local variety at more advanced stages of growth (10 and 12 weeks).

REFERENCES

