Participatory on Farm Evaluation of Improved Napier grass (*Pennisetum purpureum)* accessions in northern Tanzania

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Abstract

In Tanzania livestock feed availability is one of the major problems hindering livestock productivity. Integrating improved forages such as Napier grass into existing livestock farming systems has potential to improve the overall supply of feed resources for livestock. Participatory variety selection involving farmers was conducted at on-farm field trials managed by farmers using a rating and voting exercise in 2014 and 2015. This was done to evaluate the performance of Napier grass accessions and establish farmers' criteria for Napier grass accession selection. Six Napier grass accessions (KK2, KK1, ILRI 16837, ILRI 16835, ILRI 16803 and ILRI 14984) were harvested at six and eight weeks from 3 field trials replicated 3 times in a randomized complete block design. Two cuts per season of growth, nutrition and yield data was collected for two seasons. Farmers identified and ranked their preferred napier grass characteristics. The number of leaves and shoots, tolerance to drought, rapid regeneration after harvest and length of stem were the main characteristics identified. Farmer's ranked (pairwise ranking) Kakamega (KK) 2, ILRI 16835, ILRI 16837 and KK1 as first, second, third and fourth best accessions, respectively. The six weeks DM yields of the accessions were 1.94, 1.50, 1.33, 1.31, 1.24 and 0.75 for accessions ILRI16835, KK2, ILRI16837, KK1, ILRI14984 and ILRI16803 respectively. The mean yield was 1.40 t ha^{-1} (DM); sd = 0.97 and results further showed a significant ($P<0.05$) difference between accessions ILRI16803 with the rest of the accessions. The number of tiller showed a significant relationship with DM yield. Farmers ranking and the research results show ILRI 16803 as the worst performing accessions. This shows the importance of involving farmer's variety selection process because yield alone is the most important characteristics in forage choice. Based on the results, KK2 and ILRI 16835 are the best bet accessions to integrated in the in the study area. Farmers' criteria of selecting Napier grass accessions will inform future Napier grass improvement.

Key words: Napier grass; forage; livestock; sustainable intensification