

Assessment of the Effect of Inclusion of Hybrid Napier, Gliricidia and Pureria in Maize Silage

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The influence of inclusion of hybrid Napier (*Pennisetum purpureum* x *P. americanum* va. CO3), Pureria (*Pureria phaseoloides*) and Gliricidia (*Gliricidia sepium*) on the quality of maize (*Zea mays* cv. Veera) silage was assessed. The experiment was performed as a randomized complete block design with five forage inclusion levels in maize silage (0%, 27% Napier, 50% Napier, 29% Pureria, 40% Gliricidia) and two ripening periods (35 days, 45 days). Maize, Napier, Pureria, and Gliricidia had 23.54, 17.06, 18.40, and 27.49 dry matter (DM) and 9.73, 8.04, 16.05, and 20.16 percent crude protein. Experimental silage bales (25 kg, 485-587 kg/m³) were assessed for pH and DM, lactic acid, soluble carbohydrates, and ammonia nitrogen contents. The level of inclusion of forage and ripening period significantly ($P<0.05$) influenced silage quality. The DM content of 50% Napier included silage was significantly low (17.40% - 19.94%) and thus is not suitable. A very low level of soluble carbohydrate in Pureria and Gliricidia included silage at 45 days (0.24% and 0.26%, respectively) is an indication of the completion of ensiling before 45 days of ripening. Pure maize and 27% Napier included silage took 45 days to achieve the minimum acceptable level (10%) of lactic acid (10.25% and 18.11%, respectively). Corresponding with the lactic acid level, pure maize and 27% Napier included silage recorded low ($P<0.05$) pH at 45 days (3.24% and 3.45%, respectively). The ammonium nitrogen contents in Pureria and Gliricidia were higher at 45 days (0.327 and 0.132, respectively) probably due to the fermentation by clostridium. The study recommends the inclusion of Napier, Pureria, and Gliricidia in maize silage at 27%, 29%, and 40%, respectively. Further, the adoption of 45-day ripening period is beneficial for pure maize and 27% Napier included silage. However, 29% Pureria and 40% Gliricidia included silage should be ripened for only 35 days.

Keywords: Ammonia nitrogen, Dry matter, Lactic acid, pH

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