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Evaluating the Traditional Feed Storage Systems of Grain Legume Fodders in Northern Ghana

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Abstract

Feed scarcity and high feed costs, especially during the dry season, are major challenges to ruminant production in West Africa. Crop residues are tradable commodities, and they are commonly used as an alternative feed source in the absence of grazing resources. The residues of grain legumes, also known as grain legume fodders (GLFs), such as groundnut and cowpea haulms, have a better nutritional quality than cereal residues, such as maize and rice straws. Little is known, however, about the impact of different feed storage systems on the nutritional quality of GLFs. We, therefore, evaluated the effects of location (rooftop, tree fork and room) and type of storage (packed sacks and unpacked, but tied with ropes) on the nutritional quality of GLFs (cowpea, groundnut and soybean fodder) stored for four months. Each month, stored fodders were weighed and sampled for quality assessment based on laboratory analyses and, ranked by groups of farmers based on indigenous quality indicators, such as colour, smell and leafiness. To determine palatability and dry matter (DM) intake, we also fed one kilogramme of each sample to 12 mature local sheep in a cafeteria fashion for 14 hours. Preliminary results indicated that room is a better storage location than tree fork and rooftop. Moreover, crude protein and organic matter digestibility decreased with length of storage time, across fodder types. DM loss during four months of storage was lower for sack storage (13 %) than for fodder tied with a rope (32 %), ($p < 0.05$). Moreover, sheep consumed more cowpea fodder when stored in sacks (833 g DM day $^{-1}$) than when tied with rope (741 g DM day $^{-1}$). Similarly, sheep consumed more groundnut fodder when stored in sacks (761 g DM day^{-1}) than when tied with ropes (649 g DM day^{-1}). Farmers and their animals ranked cowpea fodder highest, followed by groundnut and lastly soybean fodder. To conclude, the nutritional quality of GLFs can be preserved if stored in sacks in a room for a period not exceeding five months. This study provided insights into better storage practices to maintain fodder quality in feeding systems to enhance livestock production.

Keywords: Fodder quality, grain legume residues, livestock feed, storage

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