

The silage quality and nutrient composition of different gramineae and legume silage ⁽¹⁾

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Abstract

The purpose of the study was to investigate the effects of the ratio of combining gramineae and legume on silage quality and nutrient value. Three kinds of gramineae: napiergrass NPcv.TS2 no.2, corn cv. Tainung no.1 and corn cv. Tainan no.20 as well as three varieties of soybeans: green soybean, miyokozima and hengchun soybean were used in the study. All materials were harvested in the same time and made into nine distinct forms/combinations of mixed silage each with one of the gramineae and one of the varieties of soybean. Every form had six samples with different gramineae/legume ratio: 0/1, 1/1, 2/1, 3/1, 4/1 and 1/0. The results showed that silage quality and nutrient value varied significantly with not only the different kinds of gramineae and soybean but also the ratios. Pure gramineae silage (gramineae/legume = 1/0) had the best fermentation quality. Moreover, corn silages were better than napier silage while the two varieties of corn performed similarly. The worst fermentation quality was found in pure legume silage (gramineae/legume = 0/1), yet difference existed among the soybean varieties. The fermentation qualities of mixed silage, which were between those of pure gramineae and pure legume, could be improved by increasing the proportion of gramineae. However, the results showed an inverse relationship between nutrient value and fermentation quality. Thus, ensiling gramineae-legume mixture is an effective strategy to improve fermentation quality of legume silage and increase nutrient value of gramineae silage. Though the qualities of mixed silage vary with the properties of different gramineae, the ratios of forage corn/soybean between 3/1 and 4/1 have satisfied performances in both fermentation quality and nutrient value.

Key words: Gramineae-legume silage, Forage corn, Napiergrass, Forage soybean.

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