Legume Nitrogen Versus Fertilizer Nitrogen in Protein Production of Forage

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Nitrogen can be supplied to forage grasses of humid and irrigated regions either by fixation from legumes grown in association with grasses or by applying fertilizer nitrogen to grasses in pure stand. The former is most widely accepted and is generally considered to have certain advantages. Recently, however, there has been renewed interest in the relative merits of these two methods of obtaining productive and nutritious forage. Difficulties encountered in maintaining stands of legumes in mixed seedings, the increased incidence of bloat, and larger supplies of fertilizer nitrogen have combined to stimulate new thinking on the possibility and feasibility of growing grasses supplemented with fertilizer nitrogen for pasture, hay, and silage.

Several workers have demonstrated the benefits derived from growing legumes in association with grasses (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13). One of the chief values commonly attributed to legumes is that they improve the quality of forage through an increase in protein of the mixed herbage. Some investigators have reported that legumes exert a beneficial effect in increasing the protein content of the non-legume component of the mixture.

Very little work has been reported comparing directly the protein percentage and production of grass-legume mixtures with that of the components of the mixture grown in pure stands with and without nitrogen. The studies here reported were designed to make such comparisons relative...