

EFFECTS OF MANURE ON LEGUME PRODUCTIVITY AND PERSISTENCE

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Abstract

Forage legumes such as alfalfa and red clover have greater nutritive value than grasses, reduce the need for applied N, and may be more productive during drought. Producers often wish to apply manure to grass-legume or pure legume stands, however, to increase yield, amend soil nutrient deficiencies, or address manure storage challenges. This practice may reduce legume persistence and result in poor hay or silage preservation. In two separate studies, dairy manure was applied to red clover – orchardgrass mixtures or to alfalfa to determine its effect on productivity, persistence, and feed quality. Applying liquid or solid manure (60 lb N/acre) to a grazed red clover-orchardgrass mix increased annual yield 500 lb DM/acre above that of the non-fertilized control (7100 lb DM/acre/year), but reduced annual yield when applied in July or September. Applying manure in any form at any time of the year reduced red clover persistence, but the effect was generally greatest when application occurred in July. Applying liquid manure to alfalfa did not improve annual yield. Based on counts of *Clostridium tyrobutyricum*, the greatest risk of undesirable fermentation after harvesting for balage occurred when slurry was applied 7 and 14 days after cutting compared to application directly onto stubble. Results from these studies suggest that 1) spring manure application to grass-legume pastures will improve annual yield but will likely reduce legume persistence, which may ultimately reduce pasture nutritive value; and 2) manure application to alfalfa stubble is preferred, but if application to growing alfalfa is necessary, choose old alfalfa stands and consider additional field wilting to reduce clostridial fermentation.

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