

EFFECT OF ENSILING RED CLOVER-RYEGRASS USING BLENDS OF HOMO-AND HETEROFERMENTATIVE LACTIC ACID BACTERIA ON FERMENTATION CHARACTERISTICS, AEROBIC STABILITY AND HYGIENIC PARAMETERS

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Abstract. The second cut of a second-year red clover (*Trifolium pretense* L.) and perennial ryegrass (*Lolium perenne* L.) mixture (50:50 on fresh weight basis; 265 g dry matter kg⁻¹) was ensiled in 3.0 litre laboratory bottles. The forage was ensiled (I) without additive, and (I1) with homo-and heterofermentative lactic acid bacteria (LAB) blend (*L. plantarum*, *E. faecium* and *L. buchneri*) or (I2) homofermentative LAB blend (*E. faecium*, *L. lactis*, *L. plantarum*). Application rates of the additives I1 and I2 were 250 000 cfu g⁻¹ and 150 000 cfu g⁻¹ fresh forage weight respectively. Both inoculants significantly increased dry matter content and retained significantly higher water-soluble carbohydrates compared to the uninoculated controls. Bacterial blends I1 and I2 had a positive effect on red clover-ryegrass silages with significantly lower pH and shifting fermentation toward lactic acid with homofermentative LAB (I2) or toward acetic acid with homo-and heterofermentative LAB (I1). Both inoculated silages had significantly lower ammonia-N, butyric acid, alcohols concentrations and in-silo DM loss. The application of both the additives was sufficient to inhibit clostridia, yeast and moulds growth and increased silages aerobic stability.

Keywords: ryegrass/clover swards, silage, homo-and heterofermentative LAB, forage quality, fermentation, aerobic stability.