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Effect of dry matter content and inoculants on oat and oat/alfalfa mixture after long-term ensiling [1]

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Abstract

The purpose of this study aims to investigate the effect of different inoculants on four-set materials ensiling, including oat with dry matter content 29.8% and 50.7%, and oat/alfalfa mixture with dry matter content 33.8% and 62.6%, respectively, for a period of 18 months. The inoculation includes the following 7 treatments: control (no inoculant), Treatment A (inoculated with *Lactobacillus acetotolerans* SOR-4, 4×10^6 cfu/kg), Treatment B (inoculated with *Lactobacillus buchneri* TNC-5, 2×10^8 cfu/kg), Treatment C (inoculated with *Lactobacillus plantarum* L10531, 2×10^6 cfu/kg), Treatment D (inoculated with commercial inoculant, *L. plantarum* and *Lactobacillus casei*, 2×10^8 cfu/kg), Treatment E (inoculated with commercial inoculant and *L. acetotolerans* SOR-4) and Treatment F (inoculated with commercial inoculant and *L. buchneri* TNC-5). The material was treated and sealed in a vacuum bag separately, with four replications per treatment. From the results of variance analysis, material, it showed that dry natter content and inoculation were important factors that affected silage fermentation. In addition, there were interaction effects among these factors. The overall performance (including pH, fermentation quality and Flieg's score) of oat/alfalfa with dry matter content 33.8% was the best among these four-set materials, followed by those of oat with dry matter content 50.7% and oat/alfalfa with dry matter content 62.6%. The overall performance of oat with dry matter content 29.8% showed the worst performance. In most conditions, the fermentation quality of inoculations was better than that of control. However, the treatments inoculated with *L. acetotolerans* SOR-4, commercial inoculant, and commercial inoculant with *L. acetotolerans* SOR-4 had better silage quality. On the contrary, the effect inoculated with *L. buchneri* TNC-5 was poor. The results of this study showed that oats and oats/alfalfa inoculated with homo-fermentative inoculant performed better during the long-period preservation. Further, *L. acetotolerans* SOR-4 had the potential for developing as the silage additive.

Key words: Oat, Alfalfa, Ensiling, Inoculation.

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