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Effectiveness Evaluation of Microbiological Preparations for Preserving Ensiled Plant Feeds in a Model Experiment Using Microbiomic and Bioinformatic Tools

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ООО Биотроф+

Keywords: Biopreparations, strains, plant feed, ensiled feeds, metagenomic next-generation sequencing (NGS), bioinformatics

Abstract

Ensiling is the main method of preparing bulk forages for cattle in the conditions of the risk farming zone. This zone includes St. Petersburg and the Leningrad Oblast due to their geographical location and high humidity. To improve the efficiency of enzymatic processes during ensiling, various biopreparations of lactic acid bacteria that consist of one or more strains are used. However, the biotechnological potential of lactic acid bacteria involved in silage fermentation remains insufficiently studied. Thus, the selection of microorganisms for use in silages should always be carried out with all rigor and meet certain criteria. The aim of this study using metagenomic next-generation sequencing (NGS) and bioinformatics was to assess the efficiency of applying monocultures of lactic acid bacteria strains (*Lactobacillus plantarum* 50 and

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[Papers](#)

Enterococcus faecium 46). We further evaluated combining these strains for the ensiling process in a model laboratory experiment. As a result, it was shown that the greatest stability of microbiome and a high proportion of lactobacilli in the ensiled feeds, the best pH levels and silage quality were achieved using a combination of strains (*L. plantarum* 50 + *E. faecium* 46).

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