The effect of selected inoculants on fermentation quality of whole crop rice silage(1)

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Abstract

The purpose of this research is to evaluate the effects of inoculants selected from local resource on fermentation quality of whole crop rice silage. The materials used in this study were whole plants of rice harvested at two maturity stage, late dough and yellow. After cut and different inoculants treatments, the materials were ensiled for two months at room temperature to evaluate the inoculant effect. Treatments included inoculation with commercial inoculant Ecosyl (Eco, *Lactobacillus plantarum*), inoculation with selected strain St3 (St3, *L. alimentarius*), inoculation with selected strain St12 (St12, *L. plantarum* subsp. *plantarum*), inoculation with selected strain St15 (St15, *L. plantarum* subsp. *plantarum*), inoculation with mixture of strains St3, St12 and St15 (Mix), addition of 1% sucrose (Sug), addition of 1% sucrose and inoculation with Ecosyl (Sug + Eco), addition of 1% sucrose and mixture of selected stains (Sug + Mix), and no inoculation (control). The fermentation qualities were affected by maturity, inoculation and addition of sucrose. The total volatile fatty acid contents of whole crop rice silage at late dough stage were higher than those at yellow stage. However, the fermentation quality improved with the increase in maturity. The lactic acid contents increased with inoculation, and there were significant difference among different inoculation treatments. The best inoculation treatment was Mix (mixture of selected strains) which had higher lactic acid contents and lactic acid/acetic acid ratio (L/A). Addition sucrose improved fermentation of whole crop rice silage also. The treatment of addition of sucrose and inoculation had better results than those of addition of sucrose only. The results showed that inoculation with lactic acid bacteria effectively improve the fermentation of whole crop rice silage, and the local strains were more effective than commercial one.

Key words: Whole crop rice silage, Lactic acid bacteria, Silage quality.

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