

**Abstract**

This study was carried out to evaluate changes in chemical composition and nutritional value of Soybean straw silage in response to urea, molasses and enzyme. For this aim Soybean straw was harvested and chopped with cutting length about 2 to 4cm. The chopped straw then was mixed with urea(5%), molasses(10%) and enzyme (3 g/kg DM) and ensiled in 5 Kg plastic baskets. The silages were opened after 45 days and chemical compositions including dry matter (DM), organic matter (OM), ash, ether extract (EE), crude protein (CP), cell wall and cell wall without hemicelluloses fractions were measured according to the standard procedure. Dry matter digestibility, metabolizable energy content and dry matter degradability were also determined by gas production (*in vitro*) and nylon bags (*in situ*) methods. Results showed that the addition of urea caused a significant increase in pH content, CP, OM, DM, and EE and decreased NDF and ADF content ( $P < 0.05$ ). Addition of molasses caused a significant increase in CP content, OM and DM, and decreased EE, pH, ADF and NDF content ( $P < 0.05$ ). Addition of Enzyme caused a significant decrease in EE, NDF and ADF content ( $P < 0.05$ ). Addition of urea, molasses and enzyme mixture leads to a significant difference between the dry matter, organic matter, crude protein, crude fat, NDF and ADF compared to control ( $P < 0.05$ ). Digestibility results showed that urea, molasses and enzyme caused a significant increase in dry matter digestibility. In addition, the findings obtained from *in vitro* gas production method revealed that the time incubation addition urea, molasses and enzyme caused increased gas production values ( $P < 0.05$ ). In conclusion, considering the changes in cell wall contents, hemicelluloses contents and degradability values in the present study, it can be suggested that the use of supplements urea, molasses and enzyme can be used to make good soybean straw silage.

**Key words:** Fibrolytic enzyme, Urea, Soybean straw, Molasses, Nutritive Value.



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