

Feasibility assessment of sub-quality sweet potato silage as a feed resource for Holstein lactating cows ⁽¹⁾

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Abstract

This study is aimed to explore the proper ensiling method for domestic sub-quality sweet potato (SSP) and its feasibility as a feed ingredient for lactating cows. Eleven silages constituted of SSP, soybean pod (SP) and wheat bran (WB) sequentially from 10:0:1 to 0:10:1 fresh weight ratios were formulated. With the decrease of high starch SSP and increase of high fiber SP, non-fibrous carbohydrate (NFC), the *in vitro* dry matter digestibility (IVDMD) of the silages were decreased and crude protein and fiber content increased. Ensiling effectively cut down the pH value by 0.88, decrease IVDMD by 5.1%, but has little effect on the crude protein and fiber contents. Due to the good quality, SSP + SP + WB silages from 9:1:1 to 5:5:1 ratio was recommended. In the feeding trial, silage formulated by SSP + WB at 10:1 fresh weight ratio was used. By substituting the wet brewer's grains and soybean hull pellet, SSP + WB silage was added into diets by 0, 4.5, 9, or 13.5% (DM basis). A total of 28 Holstein cows, with daily milk yield above 23 kg, were randomly assigned into four groups and group fed for 24-day feeding twice. Results showed that ensiling decreased 28.7% of the trypsin inhibitor activity in SSP. The main effect by adding SSP + WB silage was the high DM intake and the low milk fat percentage (control vs. three adding groups, 3.76 vs. 3.40%, $P < 0.05$). Milk yield increased following the increasing addition of SSP + WB in diets. The low fiber and high NFC contents in diets may attributed to the response. NDF content was decreased by 20% from 42.2% to 32.1% and the NFC was increased sharply by 32% from 31.0% to 42.8%. SSP is an feed ingredient of high energy and digestibility for dairy cows. To avoid the milk fat reduction and the possible rumen acidosis, it is suggested that adding SSP in diet to substitute the corn in the grain mixture. This can balance the diet nutrition and maintain the rumen health and the cow milking performance.

Key words: Feed resource, Holstein lactating cow, Milk fat, Non-fibrous carbohydrate, Sub-quality sweet potato.

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