



Feeding sugar beets and beet pulp to dairy cows

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Sugar beet is a temperate climate crop grown mainly for production of sucrose. A recent study from the Atlantic Dairy and Forage Institute, NB, Canada, determined if sugar beets can be efficiently added to mid-lactating dairy cow diets as a source of energy.

The researchers (Evans et al., 2016) replaced corn and barley with sugar beets at 0, 8.0, 16.0, and 24.0% of the total diet dry matter (DM). Soybean meal was used to adjust protein content in the diets (16% protein).

Sugar beets used in the current study were harvested in the Port Dover region of Ontario, Canada, in early November 2014. Dry matter, protein, fibre (NDF), and sugar contents in the beets were 23.3, 2.3, 11.6, and 71.2% of DM, respectively. They were chopped just before being added to the TMR at particles that ranged from 2-4cm in length and approximately 1cm in width. Sugar level in the diets increased with the inclusion of beets from 4.61% in the TMR without beets to 19.12% in the TMR with the greatest inclusion of beets.

The results, published in *The Professional Animal Scientist*, showed similar performance (26.33kg of milk/day, 31.2kg/day 3.5% fat-corrected milk, 3.68% milk fat, 3.47% milk protein) and feed efficiency (1.25kg of energy-corrected milk/kg of dry matter intake) among diets.

Sugar beet pulp is a co-product of the sugar industry high in fibre concentration and pectic substances that is used as a feed for ruminant. Using data obtained from 34 studies published from the last 26 years, researchers (Münnich et al., 2017) from the Institute of Animal

Nutrition and Functional Plant Compounds in Vienna (Austria) performed a meta-analysis to evaluate the effects of beet pulp inclusion in cows' performance and the rumen environment.

The inclusion levels of beet pulp in these studies averaged 14.5% of diet dry matter (ranged from 0-44.7%), and the amount of beet pulp fed to cows averaged 2.79kg DM per day (0-5.56kg).

The findings, published in the *Animal Feed Science and Technology* magazine, showed that although milk and milk protein yield did not change, beet pulp inclusion had a positive effect on milk fat yield and milk fat percentage.

However, the highest yield and highest milk fat percentage were found in medium beet pulp inclusion level (10-20% of DM). The increase in milk fat yield is due to a greater production of ruminal acetate, since this volatile fatty acid is an important precursor for de novo milk fat synthesis.

In conclusion, these studies showed that sugar beets and beet pulp can be included in lactating cow diets without affecting performance.

