



# Different approaches for boosting milk fat yield

by **Fernando Diaz (DVM, PhD)**

Milk fat is the most valuable component in milk. These three studies published recently show different approaches for improving milk fat yield.

**Reducing the risk of milk fat depression:**

A work conducted at the University of Nebraska-Lincoln evaluated the additive effects of starch and fat as risk factors associated with milk fat depression in dairy diets. The researchers (Ramirez Ramirez et al., 2015) compared a control diet (fat 5.2%, starch 19%) with three other similar diets containing either 0.97% added corn oil (fat 6.4%, starch 18%) or 8.5% additional ground corn (fat 5.5%, starch 22%), or both 0.97% corn oil and 7.6% corn (fat 6.5%, starch 23%). All diets contained 33% corn silage, 10% alfalfa haylage, and 20% DDGS.

The results, published in the *Journal of Dairy Science*, showed the inclusion of oil, starch, or a combination of both induce milk fat depression, measured as a reduction on the overall concentration and yield of de novo synthesised fatty acids (<16 carbons) in milk. Compared with the control diet (3.3% milk fat), diets with additional corn oil or corn starch decreased milk fat by 0.3 percentage units, whereas the diet containing both risk factors decreased milk fat by 0.6 units. Interestingly, ruminal pH was not affected by the diet, averaging 5.87 with an average minimum of 5.50 and an average maximum of 6.71 across treatments.

**Avoiding sorting behaviour:**

A study published recently (Miller-Cushon and DeVries, 2017) showed the association between sorting behaviour and milk fat production. The researchers

evaluated feeding behaviour in 28 lactating Holstein cows individually housed in a tiestall barn at the University of Guelph, Kemptville Campus Dairy Research and Innovation Center. Particle size distribution in the offered diet was 8.0% long particles (>19mm), 53.5% medium particles (8-19mm), 29.1% short particles (1.18-8mm), and 9.4% fine particles (<1.18mm). Cows sorted against long particles and in favour of short and fine particles. On average, intake of the longest particles, expressed as a percentage of the predicted intake, was 78% (ranged from 45 to 103%). Milk production on the group was 40.2kg/day with 3.81% and 3.30% protein. The authors found negative associations between feed sorting and milk composition: every 10% increase in sorting against long particles, milk fat content decreased by 0.1 percentage units.

**Feeding management:**

A recent study from the University of Alberta published in the *Journal of Dairy Science* evaluated the effects of feeding frequency on performance of lactating dairy cows. All cows were fed a high-grain diet containing 36.5% forage (barley silage), 17.9% forage neutron-detergent-fibre (NDF), 29.4% NDF, and 31.6% starch distributed either once per day at 0800 hours or three times per day at 0800, 1500, and 2200 hours.

The researchers (Macmillan et al., 2017) reported feeding cows three times per day does not affect intake or milk yield; however, it increases milk fat yield by 0.14kg/day (1.22 vs. 1.08kg/d) and tended to increase milk fat concentration (3.45 vs. 3.14%) compared to one time feeding. As result, feeding three times improved 3.5% Fat-Corrected-Milk production from 34.2-36.4kg per day.