

DAIRY | PRODUCTION

# Researcher probes feed, milk quality relationship

**Feeding strategy** | Official hopes to decrease the amount of saturated fatty acids in milk

**BY MARGARET EVANS**  
FREELANCE WRITER

LINDELL BEACH, B.C. — A Finnish researcher is trying to figure out if milk can be made more healthful by changing what cows eat.

Anni Halmemies-Beauchet-Filleau of MTT Agrifood Research had studied the role of forage species and their lipid metabolism in ruminants for her doctoral thesis. She wanted to know whether the feed given to dairy cattle could contain more unsaturated fatty acids. If so, what would be the desired forage and how should it be fed?

What she found is that it is possible to feed cows so that their milk naturally contains omega 3 and omega 9 fats.

"Milk and dairy products are a major source of medium chain and total saturated fatty acids," said Halmemies-Beauchet-Filleau in an email interview.

"Furthermore, excessive consumption of saturated fatty acids is associated with an increase in cardiovascular disease (CVD) risk (which) is the leading cause of deaths worldwide. Lipids in forages are typically rich in essential polyunsaturated fatty acids.

"Depending on the production system, forages typically contribute between 25 percent and 100 percent of the energy requirements of lactating cows. Forages also represent a natural, environmentally sustainable, and relatively inexpensive

source of nutrients for ruminants."

According to an MTT news release, the aim of the research was to develop a feeding strategy to decrease the percentage of saturated fatty acids in milk and increase unsaturated fats, especially oleic acid (omega 9) and alpha-linolenic acid (omega 3).

About 50 percent of milk fat is generated in dairy cows' mammary glands, while the rest comes from fats in forage.

However, unsaturated fats in forage become saturated fats in the rumen during a digestion process called biohydrogenation.

Halmemies-Beauchet-Filleau said palmitic acid is the predominant saturated fatty acid in milk fat and oleic acid is the predominant unsaturated fatty acid in milk.

"Palmitic acid ranges typically in bovine milk fat from 25 percent to 40 percent, and oleic acid from 15 percent to 25 percent," she said.

However, these values changed when the research focused on different feeding regimens.

One test focused on feeding fresh grass, while other tests were based on hay or silage prepared both with and without an acid-based additive.

The greatest advantageous effect on lipid metabolism came from feeding cows on fresh pasture or freshly cut grass.

"In the present work, feeding fresh grass compared with grass hay decreased milk fat palmitic acid content from 37 percent to 27 percent and increased that of oleic acid from



**Researchers found red clover decreased the amount of fatty acids in cattle's rumen when replacing grass silage.** | AILA VANHATALO, UNIVERSITY OF HELSINKI, FINLAND PHOTO

15 percent to 23 percent," she said.

"(However), feeding hay relative to fresh grass resulted in lower mammary uptake of preformed medium and long chain fatty acids from plasma that are known to inhibit the synthesis of saturated fatty acids in the mammary gland."

The researchers also replaced grass silage with red clover silage to further research the value of feeding fresh grass.

An eight acre field was sown with red clover as a test plot on the University of Helsinki research farm in Viikki. The clover was harvested as silage for the experiment, and the red clover was offered to the dairy cows along with a camelina supplement.

Camelina contains 40 percent protein and 35 percent oil high in omega 3 fatty acids when made into meal. It

can produce more than 150 litres per acre of vegetable oil and up to 400 kilograms per acre of high protein animal meal.

"About 2.4 kg of camelina press cake per cow per day were fed on an air dry basis," Halmemies-Beauchet-Filleau said.

"Fatty acid intake was 173 grams per day higher in cows fed camelina press cake relative to the unsupplemented control diet. Replacing grass silage with red clover accomplished a distinct decrease in the saturation of fatty acids in the rumen and increased the concentration of alpha-linolenic acid in milk fat."

The current results did not fully clarify the role of red clover in the protection of dietary lipids from biohydrogenation in the rumen, but the theory is that it seems more probable

that changes in rumen microbial community and digestion kinetics could be important factors.

"Feeding fresh grass enhanced the mammary uptake of preformed fatty acids, including saturated palmitic acid and unsaturated oleic and alpha-linolenic acids, that seemed to inhibit the synthesis of saturated fatty acids in the mammary gland," she said.

"It is probable that mobilization of adipose tissue contributed to a higher supply of fatty acid for the mammary gland. We are not certain what drives the plausible mobilization of adipose tissue, but changes in hormonal status could be one option. More research is needed to investigate the mechanisms behind the mobilization of adipose in cows fed fresh forage."

LABOUR | FOREIGN WORKERS

# Growers tout mutual benefits of seasonal workers program

**Canada and Jamaica** | Employers say Seasonal Agricultural Workers Program could be improved with citizenship incentives

**BY JEFFREY CARTER**  
FREELANCE WRITER

BLenheim, Ont. — Two Canadian farmers were among 180 people recognized during Jamaica's National Heroes Day last October.

"We've been working in the agricultural management for a long time," said Ken Forth, who grows broccoli and lettuce near Ancaster.

"The awards were not so much about being employers as about making these programs work."

The other recipient was Hector Delanghe, an apple grower near Blenheim.

Forth and Delanghe are directors with Ontario's Foreign Agricultural Resource Management Services and have employed Jamaican workers at their farms through the Seasonal Agricultural Workers Program (SAWP) for many years.

They said SAWP provides eco-

nomical and social benefits for all the countries involved: Canada, Mexico and several Caribbean nations.

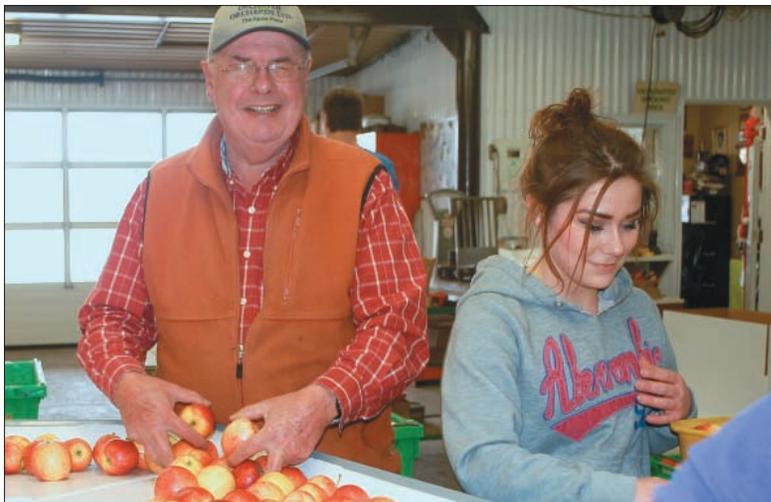
"The prime minister (Portia Simpson-Miller) talked to me about the economic value the farm workers bring back to her country," Delanghe said.

"I said, 'it's a win-win situation because our country needs your workers to grow food in Canada.' ... When we sit in a room together, we can have some give and some take."

Forth said his Jamaican employees have often used their Canadian earnings to put their children through school.

Without jobs in Canada, even a high school education is out of reach for many, he added.

Forth and Delanghe acknowledged that SAWP has been criticized in some circles, but they



**Hector Delanghe works alongside one of his Canadian employees, Sadie Bowlen, at his Chatham-Kent farm near Blenheim.** | JEFFREY CARTER PHOTO

insisted it a model program that includes safeguards for employees and employers.

SAWP began as an agreement between Jamaica and Canada but was gradually expanded to include

other Caribbean countries and Mexico.

Forth and Delanghe feel the program could be improved by providing interested workers with a chance to become Canadian citizens.

Delanghe said honest and hard working people who have already contributed to Canada through their SAWP employment and other low-skilled temporary work programs should have that opportunity, regardless of their level of education or bank account.

"I think Canada needs more immigration, and our birth rate proves that."

Delanghe and Forth employ workers who have been returning to their farms for many years.

SAWP is part of Canada's Temporary Foreign Workers Program. Workers employed in agriculture represent close to 10 percent of all temporary workers in Canada.