More milk for India

A new feed supplement is set to increase milk production from India's dairy herd by millions of litres a day, boosting the economic and social situation of the country's 11 million dairy farmers.

The 'by-pass protein' supplement, developed by scientists from CSIRO Livestock Industries and India's National Dairy Development Board (NDDB), is made from the residue of oil seed crops, such as sunflower and canola, that remains after the oil has been extracted.

This residue has been fed to Indian cows and buffaloes as a protein supplement for many years, but its nutritional value has been unrealised.

'Oil seed by-products ingested by cattle, such as sunflower meal, contain about 33% protein, but about 70% of that is degraded by microbial processes in the animals' rumen,' CSIRO project leader, Dr Suresh Gulati, says.

'The bacteria in the rumen degrade the protein to amino acids, which are then converted to ammonia. Some of this is used to build microbial protein, while the rest is excreted.

'In many feeding situations, insufficient protein makes its way through the cow's four stomachs and into the intestine, where it is absorbed and used by the cow for processes such as milk production.'

Gulati and the NDDB have found a way around this problem by 'protecting' the protein from breakdown in the rumen.

By processing the oil-seed protein in a particular way, the team has increased by 75% the amount of protein bypassing the degradative process in the rumen and entering the intestine.

Trials on Australian dairy farms showed cattle fed one kilogram of the supplement a day produced 1.5–1.8 litres more milk a day. In India – where cattle exist on a predominantly straw-based diet – the animals produced an additional litre of milk a day. After the cost of the feed was taken into account, farmers received an extra 8–10 rupees a day per animal, (equivalent to about 33 Australian cents).

This increased return is an exciting proposition for dairy farmers in India.

Unlike the Australian dairy industry, the Indian dairy industry relies on milk from millions of poor farming families that own maybe one or two cows and/or a buffalo. Farmers milk their cattle, take what they need for their own use, then deposit the rest at a village cooperative. Here the milk is weighed, the fat content measured, and the farmer paid depending on the grams of fat in the milk.

'The farmer then goes to the cooperative feedmill next door, and uses some of that money to buy feed for their cows or buffalos,' Gulati says.

'They live from day to day. So if they can increase their income they will have more money for food, better nutrition, a higher standard of living, more disposable income and improved education.'

A semi-commercial plant has been set up in Itola, Gujarat, and will produce 45–50 tonnes of by-pass protein supplement a day. After commercial evaluation of the supplement, the NDDB will consider installing similar plants in some of its national network of 42 feed mills around India.

'It will be very easy for feed mills to adopt this technology and train staff to produce quality controlled supplements of a high efficacy,' Gulati says.

Top: Dairy farmers carry their milk to the village cooperative.

Above centre: Testing the fat content of milk to determine payment.

Above: Dr Suresh Gulati (left) from CSIRO Livestock Industries and Professor David Beever from the University of Reading, UK, open the Bypass Protein Plant at Itola, Gujurat. The plant will produce 45–50 tonnes of bypass protein supplement a day.

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Contact: Dr Suresh Gulati (02), 9490 8787, suresh.gulati@csiro.au.

Wendy Pyper