

 **BASF**

The Chemical Company

**Good for the cow,  
good for business**



COMBI  
**Lutrell**<sup>®</sup>

Supplementary feed for dairy cows

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# Combining high milk performance with fitness.

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The main objective of economical milk production is increasing the lifetime performance of our dairy cows. For decades dairy cows have been intensively selected and bred for higher milk yield. However, the impressive increase in milk performance is accompanied by a continuous drop in effective lifetime and fertility. These developments point to the need for sustainable improvements in the fitness of the dairy cow.

**Lutrell® Combi**, the innovative supplementary feed for cows, makes it easier for the dairy cow to start lactation. With rapidly increasing milk yield the demand for blood glucose increases and its pool is emptied dramatically. Therefore it is beneficial to reduce the glucose needed for milk synthesis in the metabolism.

**Lutrell® Combi** lowers the milk fat content per kilogram of milk during the treatment period, resulting in a lower blood glucose consumption and optimizing the energy balance of the dairy cow (see figure). This means a significant relief for the metabolism at the beginning of lactation and makes a much easier time for the dairy cow during this critical, unavoidable phase of negative energy balance.

This is a fundamental distinction between **Lutrell® Combi** and other established measures which are often aimed at optimizing the energy supply to the dairy cow by increasing energy input.

## Reduction in milk fat increases glucose levels

Scientific research has demonstrated that targeted reduction in milk fat with **Lutrell® Combi** results in a higher blood glucose level within the first weeks of lactation. Consequently, less body fat has to be mobilized. A lower mobilization of body fat ultimately reduces stress for the liver, since less free fatty acids have to be processed and thus less betahydroxybutyrate is produced. This lowers fat accumulation in the liver and reduces the danger of ketosis. The dairy cow reacts by producing greater quantities of milk. Another effect of the increase in the blood glucose level is the influence on important hormones responsible for fertility processes.

Studies showed an increase in IGF-1 concentration accompanied by even more clear profiles of progesterone in the blood plasma<sup>1</sup>. As a consequence the dairy cow starts earlier in the cycle and the embryo gets more favorable conditions for faster and more secure implantation in the uterus. Gestation began 38 days earlier for cows which received conjugated linoleic acid, the main ingredient of **Lutrell® Combi**, during the transit phase and the early lactation period<sup>2</sup>.

## Economically more sustainable milk production

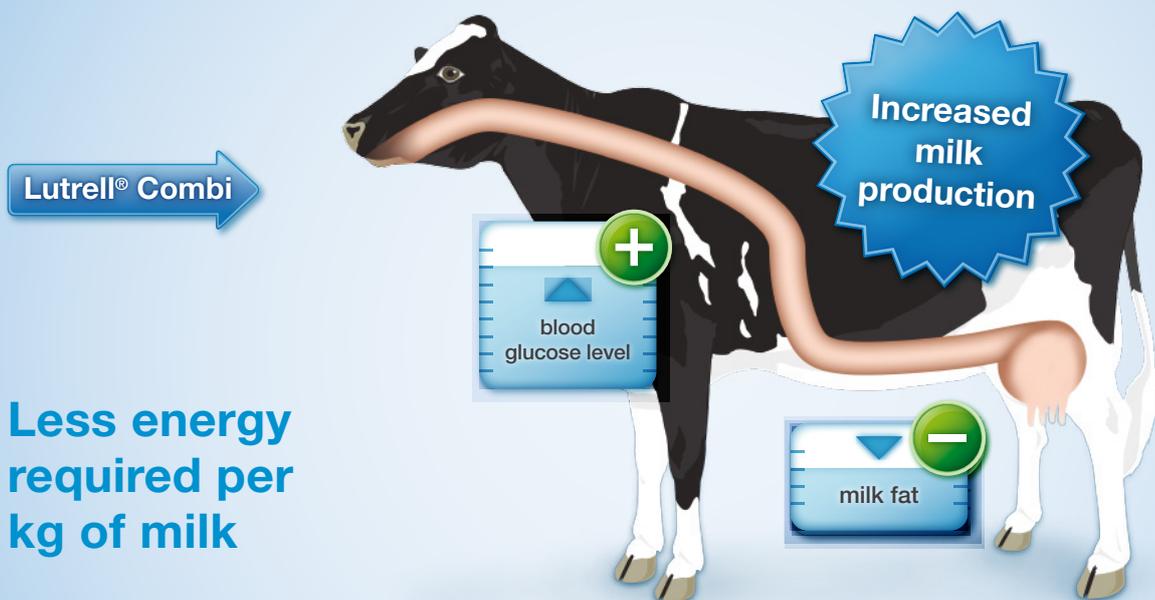
By reducing milk fat **Lutrell® Combi** helps to utilize the energy reserves of the high-performing cow more efficiently and to stabilize the metabolic situation, ultimately improving the effective lifetime and lifetime performance of the dairy cow. In doing so, **Lutrell® Combi** makes a contribution to economically more sustainable milk production. The use of **Lutrell® Combi** means an average profit for the dairy farmer of 200 € per cow and lactation. The following table contains a sample calculation illustrating how this amount grows with longer-term use of **Lutrell® Combi**.

We recommend applying 125 g **Lutrell® Combi** per cow and day, beginning on the 21st day before calving until the 80th day after calving. A shorter period of application is possible up to the 30th day after calving, however in this case the dosage should be doubled.

### References:

- 1) Castañeda-Gutiérrez et al. (2007), J Dairy Sci 90: 4253-4264.
- 2) De Veth et al. (2009), J Dairy Sci 92: 2662-2669.

## Effects of Lutrell® Combi on the metabolism of the dairy cow.



Through a time-limited modification of milk fat synthesis, Lutrell® Combi reduces the amount of glucose required per kg of milk and reduces metabolic strain, resulting in sustainable increases in milk yield. Relief for the metabolism means less mobilization of body fat, which can result in a lower frequency of ketosis.

## Average 'Lutrell® Combi' benefits per cow on your farm.

	Initial state	Lutrell® Combi	Differences absolute	Differences relative
<b>Effects on the performance of your average cow</b>				
Milk (kg/lactation)	10,000	10,700	700 kg	7.0 %
Fat (%)	4.20	4.08	-0.12 %	-2.9 %
Fat (kg/lactation)	419	423	4 kg	1.1 %
Protein (%)	3.40	3.39	-0.01 %	-0.3 %
Protein (kg/lactation)	340	363	23 kg	6.7 %
<b>Your immediate benefit (1st lactation)</b>				
'Lutrell® Combi' costs (EUR)	0	-45.00		
Milk price (EUR/kg)	0.300	0.296		
Milk income (EUR/cow and lactation) ( 'Lutrell® Combi' costs considered)	3,000	3,127	127 €	
<b>Your additional benefit (&gt;1st lactation)</b>				
<b>Intercalving interval</b>				
improvement (d)	0	10		
monetary value (EUR/d)	0	3	30 €	
<b>Replacement rate</b>				
improvement (%points)	0	5		
monetary value (EUR/100%points)	0	850	43 €	

**Total benefit via milk and reproduction:**  
( 'Lutrell® Combi' costs + benefit in milk production and reproduction)

**On average 200 € more per cow and lactation.**

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