

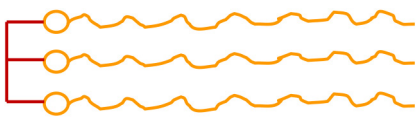
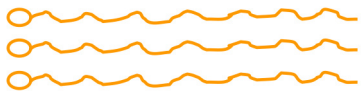


## FAT FEEDING FACTS 2

# What is Fat?

If the fatty acids in triglycerides are fully saturated, the melting point of that triglyceride will be much greater than the temperature in the rumen. If that triglyceride does not melt in the rumen, it cannot be hydrolyzed very well. That will result in lower fat digestibility, as much as  $\geq 50\%$  less than free fatty acid digestibility. But if saturat-

ed free fatty acids are fed, they are already hydrolyzed and in the form the cow needs, and so they now can flow out of the rumen simply temporarily attached to small feed particles. When they reach the small intestine, they can be absorbed into the cow's blood stream.

TRIGLYCERIDES	FREE FATTY ACIDS
<ul style="list-style-type: none"><li>• Glycerol with 3 attached fatty acids – which vary in chain length and degree of saturated and unsaturated</li><li>• Glycerol is a carbohydrate, not fat</li><li>• Triglycerides ~ 92% energy value of free fatty acids because of glycerol content</li><li>• Must be hydrolyzed or detached from glycerol in the rumen because cows utilize free fatty acids – not triglycerides</li></ul>	<ul style="list-style-type: none"><li>• Detached from glycerol and thus are “free” fatty acids</li><li>• Fatty acids have 2.25 times energy value of carbohydrates or protein</li><li>• Can vary in chain length – usually 16 to 18 carbons long</li><li>• Can vary in whether saturated or unsaturated</li><li>• Do not need hydrolysis from glycerol in the rumen</li><li>• If unsaturated, rumen microbes need to saturate in the rumen</li></ul>
<p><b>GLYCEROL WITH 3 ATTACHED FATTY ACIDS</b></p> 	<p><b>3 FREE FATTY ACIDS</b></p> 

As indicated in this comparison of free fatty acids vs triglycerides, triglycerides have about 92% of the energy value of free fatty acids. The presence of glycerol dilutes down the energy value of the triglyceride since glycerol is a carbohydrate which has a much lower energy value than fatty acids.

The issue of saturated vs unsaturated fatty acids for dairy cows will be addressed in the next edition of Fat Feeding Facts.