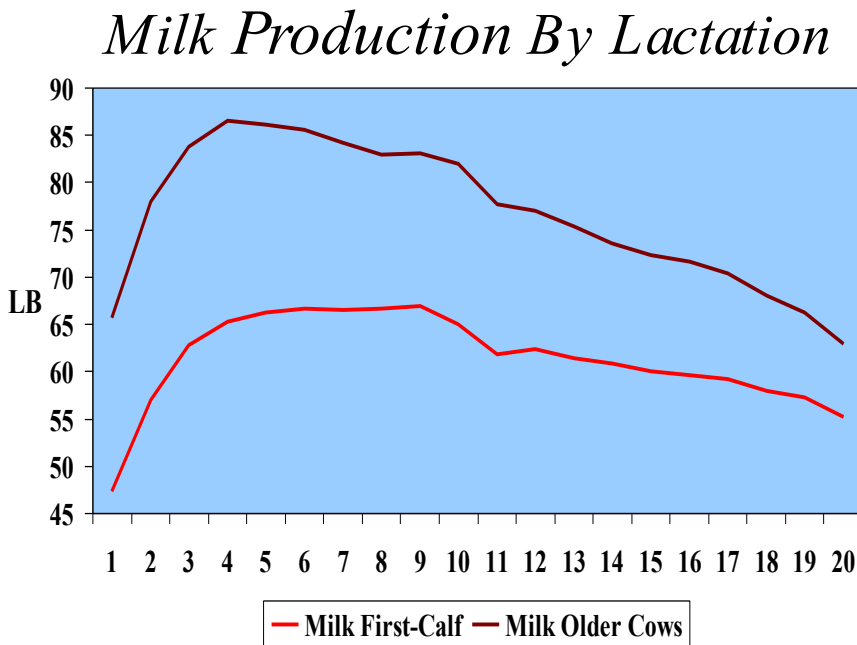


Fat Feeding Facts
6. Energy Balance and Milk Production

Cows in early lactation have a challenge in trying to consume enough energy to meet their requirements for milk production. Thus, they go into negative energy balance because their dry matter intake (DMI) lags their increasing level of milk production. Furthermore, there are differences between first-calf heifers and older cows.

In Figure 1, note that milk production increased more rapidly, was higher, but dropped off quicker for older cows than for first-calf heifers. This difference is because first-calf heifers are still growing by 10% more during their first lactation. Energy deficits are less for first-calf heifers than for older cows as noted in Figure 2. Thus, first-calf heifers put more energy into growth and relatively less into milk production than older cows. Consequently, they may respond even more in milk production with greater energy intake than older cows.

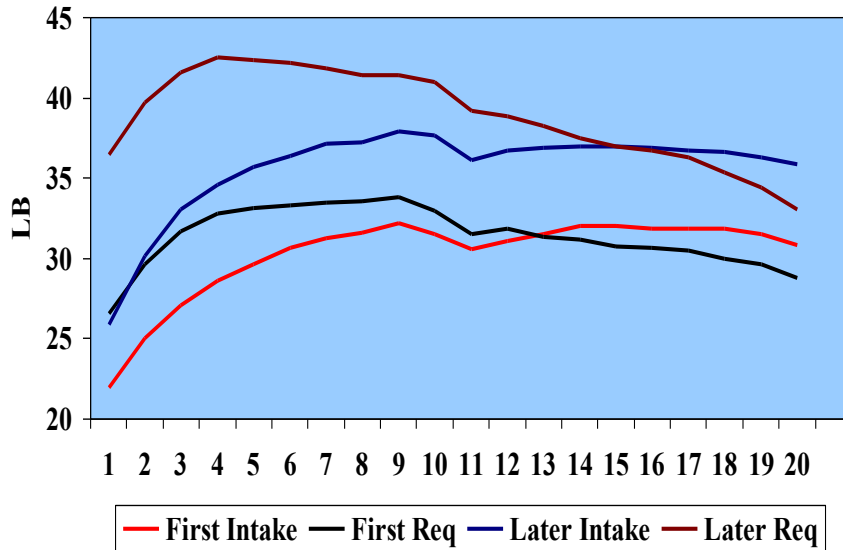
Figure 1.



Kertz et al., J. Dairy Sci. 74:2290-2295,1991.

Figure 2.

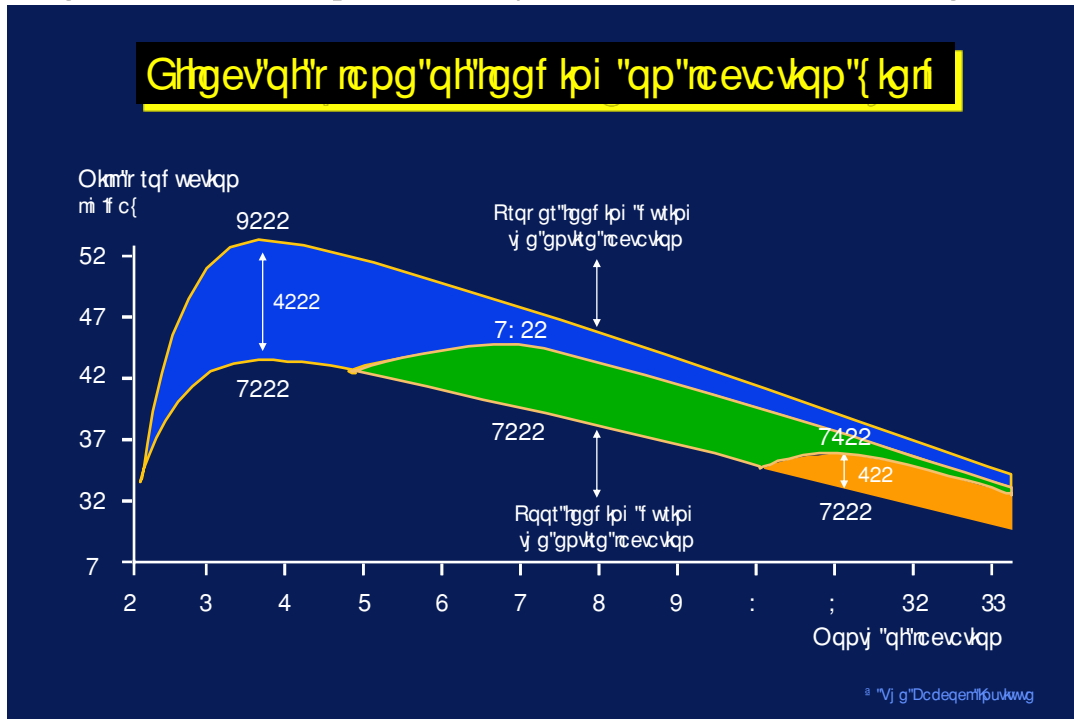
Energy Deficit by Lactation



Kertz et al., J. Dairy Sci.74:2290-2295, 1991.

The other component to this picture is that peak milk yield largely determines how much cows will produce in a lactation. It is generally recognized that for each pound more milk at peak, 200-250 lb more milk will be produced in that lactation as illustrated in Figure 3.

©Figure 3. Used with permission of the Babcock Institute. All rights reserved



So what does all of this have to do with fat feeding? As indicated in previous editions of Fat Feeding Facts, fat has 2.25 times more energy than protein and carbohydrates and increases the energy density of rations. But if the fat is more unsaturated, decreases in DMI will occur. A mostly saturated free fatty acid product will not decrease DMI, and thus will increase total energy intake. This will decrease the magnitude and extent of negative energy balance, and lead to higher peak milk yield as well as total lactation milk production.