Ten Factors Which Impact Dairy Feed Efficiency

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Feed efficiency (FE), also known as milk performance efficiency, or dairy efficiency, is the amount of 3.5% fat-corrected milk produced per pound of feed dry matter consumed. The optimal range of feed efficiency is 1.4 to 1.8 pounds of 3.5% fat-corrected milk produced per pound of dry matter consumed. See the table below to understand the ranges of feed efficiency within a herd.

Group of cows	Days in Milk	Feed Efficiency Benchmark
One group, all cows	150 to 225	1.4 to 1.6
1st lactation group	< 90	1.5 to 1.7
1st lactation group	> 200	1.2 to 1.4
2nd + lactation Group	< 90	1.6 to 1.8
2nd + lactation Group	> 200	1.3 to 1.5
Fresh cow Group	< 21	1.3 to 1.6

Hutjens, 2010 -represents 3.5% FCM. To calculate 3.5% FCM: (0.4234 X lbs milk) + (16.12 X lbs milkfat). (pounds of milkfat = 60 lbs milk X 3.8% milkfat or 0.038 = 2.28 lbs milkfat)

Knowing the feed efficiency of your herd or group of cows helps you understand if the feed you are giving your cows is getting utilized efficiently for milk production. When your herd or group of cows is more feed efficient, you will get more milk production from the same amount of feed.

Factors that should be considered when interpreting the calculated feed efficiency for your herd include:

1. **Feed Weigh Back:** Feed refusals, or feed not consumed, should be subtracted from the amount of feed offered, because failure to account for this amount of feed will result in a lower feed efficiency.
2. **Days in Milk:** A 0.15 FE unit should be added for each additional 50 days in milk starting at 150 days because cows are less feed efficient as days in milk increase and production decreases.
3. **Somatic Cell Count (SCC):** As SCC increases, milk production decreases which lowers feed efficiency.
4. **Change in Body Condition Score:** Cows are more feed efficient in early lactation when they are using body stores to support milk production. As they reach the end of their lactation cycle, they are regaining body fat stores. Energy is used to deposit these stores instead of for milk production, and feed efficiency is lower.
5. **Exercise:** For every 800 meters (approximately half a mile) a cow walks in a day, maintenance requirements increase by 1.9 Mcal, which is equal to 5 pounds of milk and would lower FE. Thus, grazing herds may have lower feed efficiencies.
6. **Rumen Acidosis:** FE drops by 0.1 units if cows have subacute rumen acidosis.
7. **Feed Additives:** Adding yeast or yeast culture, buffers, or direct-fed microbials can increase FE by 0.5 to 0.1 units.
8. **Forage Quality:** Improved forage quality increases FE, and lower forage quality hinders FE. With increased forage quality, forage intake and digestibility increase, as well as milk production.

9. **Fiber level:** As NDF percents increase, FE decreases; except FE remains constant when NDF in the total diet is 35% and above.
10. **Heat Stress:** As heat stress increases, FE decreases. When cows are exposed to an ambient temperature of 86 degrees F, the FE can be reduced by 0.1 units. When cows are exposed to an ambient temperature of 95 degrees F, the FE can be reduced by 0.3 units.

By knowing the feed efficiency of your cows, you can make more informed decisions for production and can manage in a way to get more income per cow. Feed efficiency is something that should be measured by group to know if your herd is on track for maximizing production over feed intake. For more information on this topic see the following links:
http://www.extension.org/pages/11317/feed-efficiency-and-its-impact-on-feed-intake
http://www.extension.org/pages/26134/practical-approaches-to-feed-efficiency-and-applications-on-the-farm