Department of Dairy Science
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DAIRY PIPELINE

Milk:Feed Price Ratio says it all. USDA agricultural economists calculate and report a term called milk to feed price ratio. It is designed to reflect the price of milk relative to the price of feed. To calculate it they take the price of a pound of milk divided by the price of a pound of a 16% protein ration composed of corn, soybean meal, and alfalfa hay. We see significant changes in milk production when this ratio gets out of typical proportions. Typically a ratio of 2.5 to 3.0 results in no change in national milk production. The estimated ratio for August 2002 was 2.2 compared with 3.0 in January 2002 and 3.6 in August 2001. Two factors are causing this current drop. One is low milk price and the other is higher feed prices. These ratios are reported on a national basis and reflect much of what is the case in the mid-west. Currently I calculate the price of a ration would be about $.06/lb. of air-dry feed based on cost of Virginia feed ingredients. For the milk:feed ratio to be 2.5 to 3.0 a Virginia milk price of $.15 to .18 would be needed. For accurate estimation of milk price the MILC (Market Income Loss Contract) payments should be added in and may increase the received milk price by 8% or more. What does this mean? First, it means we will likely have less cows and milk in 2003 hopefully returning the situation to a positive situation for dairy producers. Next, it is not possible to project the price of feeds because harvest is not complete but the assumption would be prices will remain higher. We can't do much with the price of milk but we can evaluate rations and reduce over feeding of all animals including replacements. Balancing rations with up to date forage tests will return more now than when feeds are cheap. My experience has been that we many times over supplement rations with protein and phosphorus resulting in excess nutrients to dispose of. Now is a good time to evaluate your feeding programs for those and other nutrients.

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More genetic information on female fertility is on the way. The Animal Improvement Programs Laboratory at USDA, Beltsville, MD plans to publish genetic evaluations for female fertility for the first time in February 2003. The trait evaluated will be "pregnancy rate" defined as the percentage of non-pregnant cows that become pregnant in a 21-day period. Pregnancy rate includes estrus expression (and detection, though the cow's genes don't cause that part), ovulation, implantation, and ultimately the ability to carry the fetus into gestation. A pregnancy rate evaluation on a bull measures the genetic ability of his daughters to become pregnant. A typical pregnancy rate proof might be +1.5, which would mean that a particular bull's daughters tend to become pregnant 1.5% more often than an average cow born in the year of the genetic base. Such a bull's daughters would get pregnant 3% more often than another bull with a pregnancy rate evaluation of -1.5%. Pregnancy rate is closely related to days open, as the only way to reduce days open (ignoring VWP) is for cows to become pregnant more quickly. The genetic evaluations for pregnancy rate could be converted to proofs for days open by multiplying the pregnancy rate evaluation by -4. The bull above with the pregnancy rate evaluation of +1.5 would sire daughters that were open on average 6 days less (1.5 X -4 = -6) than an average cow born in the genetic base year. DHI data will be used to calculate the new proofs, and individual cow fertility measures will be verified by a subsequent calving where possible. The USDA files include 36 million lactation records by 14 million cows that have been tested and identified by DHI since 1960.

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What should be the goal for reproductive performance of dairy herds in Virginia? Table 1 was constructed using DairyMetrics reports from DRMS (Raleigh, NC). In Table 1, herds were stratified by Calving Interval (CI) with daily milk yield, Projected 305 day ME milk, days in milk, and various reproductive performance variables listed. Using daily milk yield as an indicative variable a CI of less than 14 months should be the goal. Using

Projected 305 day ME milk yield as the controlling variable the ideal CI could be narrowed to 13 to 13.9 months. With each monthly increase in CI above a 13.9 month CI daily milk yield dropped 3 to 4 lbs and projected ME milk dropped almost linearly from 23,652 lbs for a 13 to 13.9 month CI to 20,791 lbs for herds having a CI greater than 16.9 months. Approximately one-third of the Holstein herds (n=1545) had a CI less than 14 months, therefore a CI less than 14 months is an achievable goal that will produce higher daily milk yield and higher milk yield over the length of the lactation. Calving interval is determined by days to first service, heat detection efficiency and conception rate. Herds that obtained a CI less than 14 months averaged less than 83 days to first service and approximately 50% heat detection efficiency (as measured by percent of heats observed) and conception rates above 40% for first service. It is interesting that conception rates at first service ranged from 40 to 47% with herds with either the shortest or longest CI having a first service conception rate of 47%. The variables that really determine the CI are days to first service and heat detection with heat detection having a strong influence of days to first service. Over the past 15 years heat detection rates have dropped 30 percent. At the same time milk production has gone up 25 percent and average herd size has increased 20 percent. Cows receive less individual attention, spend more time on concrete, and the effects are greater of negative energy balance created in early lactation when cows do not consume enough dry matter and/or energy to meet the nutrient needs required for higher milk yields. I believe these factors have worked together to depress the expression of estrus and thus make heat detection more difficult with extended days to first service and lower heat detection efficiency .

**** Upcoming Activities****

Dairy Science Recruiting Day, *Virginia Tech*		Oct. 12
Fall Dairy Conferences		
	Marion	Dec. 11
	Rocky Mount	Dec. 12
	Farmville	Dec. 17
	Culpeper	Dec. 18
	Dayton	Dec. 19
Feed and Nutritional Management Cow College, *Donaldson Brown Hotel*, Blacksburg		Jan 8 & 9 (2003)

Table 1. Change in daily milk yield, days in milk, 305 day ME milk, and reproductive performance for Holstein herds (n=4771) processed by DRMS and stratified by calving interval[1].

	Calving Interval (months)					
Item	<13	**13 to 13.9**	14 to 14.9	15 to 15.9	16 to 16.9	>16
Number of herds	129	**1416**	1856	919	290	16
Average herd size	83	**159**	160	157	125	16
Daily milk yield (lbs)	66.5	**67.1**	64.2	60.3	57.3	5
Days to 1st service	74	**82**	93	105	120	14
Conception rate 1st service	47	**41**	40	40	42	47
% heat observed	53	**50**	44	38	33	26
Projected 305 day ME milk (lbs)	22,751	**23,652**	23,264	22,404	21,592	20,7

[1] DairyMetrics reports were generated on September 11, 2002 using current DHI information for Holstein herds that have a twice daily milking schedule and 25% or less of the services were to non-AI sires.

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