

## NORTH CAROLINA FFA DAIRY CATTLE EVENT 02 December 2004

### SIRE SELECTION PROBLEM No. 1

**Situation:** Semen from these four bulls (1, 2, 3, 4) has been purchased. The bulls were selected to improve the next generation of this herd. RANK the four bulls as they best meet the following objectives in mating with the cow described below. This herd owner has a grade Holstein herd of 215 cows which is managed as a commercial herd with mostly year-round calving. The lactation herd average is currently 24,715 Lbs. Milk, 793 Lbs Fat and 712 Lbs Protein. The herd's linear somatic cell score is 3.6 and average calving interval is 14.2 months. Milk was previously marketed in an area that paid primarily for milk yield with small positive adjustments for milk fat percentage. However, the cooperative is now paying larger incentives for fat and protein and an incentive for low somatic cell counts. Type considerations revolve around sound udders and correct feet and legs. The herd owner has been greatly concerned about low herd fertility and would like to increase productive life and cow fertility in the herd. He also prefers more moderate sized cows.

**Cow to be mated:** Because the herd is a grade herd, the cows do not have linear scores available but the herd owner has noted that the particular cow to be mated is taller than average, has a high rear udder attachment, normal teats, and is slightly sickle-hocked. This cow had a 2-year-old record after calving at 24 months of age: 26,415 lbs ME milk, 872 lbs (3.3%) ME Fat, and 779 lbs (2.95%) ME Protein. She also had a linear score for somatic cell counts of 3.10 (SCCS). The cow rebred in the first lactation at 145 days in milk and is now starting her second lactation after a 14-month calving interval and 56 days dry.

	BULLS		TO		CONSIDER	
	1	2	3	4	3	4
<b>TRAITS</b>						
Est. Relative Conc. (ERCR)	2.1	0.2	0.6	1.0		
Repeatability (RPT)	88%	86%	92%	90%		
MILK	1992	1856	2036	1793		
FAT %	.03	.02	-.05	.04		
FAT	63	56	50	66		
Net Merit \$	\$530	\$461	\$514	\$459		
PROTEIN %	.05	.02	.02	.05		
PROTEIN	68	47	64	59		
Productive Life (PL)	1.7	-1.2	0.6	1.0		
Daughter Preg. Rate (DPR)	1.5	-0.5	0.1	0.7		
TPI	1678	1585	1643	1574		
SCS	2.82	3.31	2.79	3.05		
Standard Transmitting Ability for Sires						
Stature	0.85 S	1.28 T	0.13 T	1.45 S		
Strength	0.18 S	0.51 S	0.71 F	1.58 F		
Body Depth	0.25 D	0.63 D	0.26 S	1.29 S		
Dairy Form	2.22 O	0.59 O	3.63 O	2.58 O		
Rump Angle	0.72 H	1.74 S	0.66 H	1.22 S		
Thurl Width	1.92 W	0.06 N	0.03 W	1.72 N		
Rear Legs (side)	1.09 S	2.17 C	0.96 C	2.61 S		
Foot Angle	1.36 S	2.68 S	1.11 L	2.48 S		
Fore Udder Attachment	1.15 S	0.70 S	1.48 S	0.46 S		
Rear Udder Height	0.93 H	1.75 H	2.85 H	2.20 H		
Rear Udder Width	1.67 W	1.27 W	2.47 W	1.99 W		
Udder Cleft	3.34 S	0.99 S	0.90 S	1.85 S		
Udder Depth	0.55 S	0.87 S	1.34 S	1.03 D		
Teat Placement	3.08 C	0.43 W	1.74 C	1.38 C		
Teat Length	0.37 L	0.18 S	0.99 S	0.72 L		

Stature (T= Tall, S=Short); Strength (S= Strong, F= Frail); Body Depth (D= Deep, S= Shallow); Dairy Form (O= Open Ribbed, T= Tight Ribbed); Rump Angle (H= High, S= Sloped); Thurl Width (W= Wide, N= Narrow); Rear Legs (side- C= Curved, S= Straight); Foot Angle (S= Steep, L= Low); Fore Udder Attachment (S= Strong, L= Loose); Rear Udder Height (H= High, L= Low); Rear Udder Width (W= Wide, N= Narrow); Udder Cleft (S= Strong, W= Weak); Udder Depth (D= Deep, S= Shallow); Teat Placement (C= Close, W= Wide); Teat Length (L= Long, S= Short).

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**SIRE SELECTION PROBLEM No. 2**

**Situation:** Semen from these four bulls (1, 2, 3, 4) has been purchased. The bulls were selected to improve the next generation of this herd. RANK the four bulls as they best meet the following objectives in mating with the cow described below. This herd owner has a purebred Jersey herd of 195 cows in which production for milk is emphasized but because breeding stock are marketed into areas where cheese is produced both milk components and type traits such as legs and udders receive some consideration. "The lactation herd average is currently 18,972M, 815F and 763P. Milk is marketed in an area that pays primarily for milk yield with small positive adjustments for increased milk fat percentage. The owner has been concerned about inbreeding and associated problems with fertility. In checking the pedigrees, it was found that bull 2 was the maternal grandsire of the cow to be mated and no close relationships to the other bulls was noted.

**Cow to be mated:** The Jersey cow to be mated has completed three lactations and is starting her fourth lactation. Her last lactation was 28,248 M, 1129F (4.0%), and 989P (3.5%) in 345 days. The cow is structurally sound except that her teat placements are wide and bulls 2, 3, and 4 were all expected to improve teat placement.

	BULLS		TO		CONSIDER	
	1	2	3	4	3	4
<i>TRAITS</i>						
ERCR	2.0	1.1	-1.4	1.9		
RPT	89%	98%	79%	89%		
MILK	1480	1524	1465	1615		
FAT %	-.12	-.03	.05	-.01		
FAT	37	58	66	65		
Net Merit\$	408	424	414	450		
PROT %	-.07	.03	.04	.04		
PROT	41	66	52	69		
Productive Life	-0.5	0.4	-0.5	1.9		
DPR	-1.9	0.1	-0.2	2.0		
PTI	248	270	252	278		
SCS	3.45	3.15	3.05	2.90		

## **Solutions and reasons for North Carolina Sire Selection Problems - 02 December, 2004**

### **SIRE SELECTION PROBLEM No. 1**

The Holstein cow to be mated in problem 1 is a tall young cow that is generally sound physically but could have straighter legs. However, improving type traits in the next generation should be considered as secondary rather than primary selection factors. The sires for mating to this cow are placed 1-3-4-2 with cuts of 6, 3, and 6. Although sire 3 had the highest predicted transmitting ability (PTA) for milk among the four, sire 1 was close behind for milk and sire 1 had advantages in fat, protein, ERCCR, PL, DPR, TPI, and Net Merit\$. Sire 1 also was shorter in stature, consistent with the farmer's desire to have more moderate-sized cows whereas SCS levels were similar between sires 1 and 3. In placing sire 3 over 4 the primary advantages were in milk, SCS, and Net Merit\$. However, sire 4 had higher ERCCR, PL, and DPR, had straighter legs, and was of shorter stature, making this a relatively close placing. Sire 4 was placed over 2 with advantages in ERCCR, SCS, PL, DPR, straighter legs, and shorter stature. Sire 2 did have very slight advantages over sire 4 in milk, TPI, and Net Merit\$. However, because sire 2 had the lowest ERCCR, PL, and DPR as well as the least desirable SCS, legs, and stature, he was the least desirable sire for this mating.

### **SIRE SELECTION PROBLEM No. 2**

The Jersey cow to be mated in problem has a very wide teat placement but use of any of three sires (sires 2, 3, and 4 should improve that in the next generation. She is a very productive cow starting her fourth lactation. The sires for mating this cow are placed 4-3-1-2 with cuts of 5, 4, and 6. Sire 4 excels in several traits including milk, protein, PL, DPR, PTI, SCS, and Net Merit\$. He is also close the top in fat and ERCCR. Sire 3 is a logical second choice following with high fat, and the second best SCS in the class. He has advantages over sire 1 in fat, protein, SCS, DPR, PTI, and Net Merit\$. Sire 3 also is one that could improve teat placement whereas sire 1 would not. However, sire 1 has a big advantage over 3 in ERCCR and is slightly higher in milk. In the bottom placing, sire 1 places over sire 2 primarily to avoid inbreeding. Sire 1 does have an advantage in ERCCR as well. Although sire 2 has a number of positive traits that could likely be used for breeding other cows in this herd, his close relationship to the cow to be mated makes him the least desirable choice.