

National FFA Convention – Genetics and Reproduction Scenario October 2016

Scenario: Your team is a group of dairy consultants that work with dairy operations to improve the reproduction and genetics on farms. Recently, you met Felecia F. Amondson, the owner of FFA Family Dairy. Ms. Amondson wants to improve the genetics and reproductive management on her dairy operation and would like your team's advice.

FFA Family Dairy is currently milking 800 cows that are housed in a free stall dairy operation in the Midwestern US. The farm has a rolling herd average of 27,840 lbs of milk, and they typically average 3.8% milk fat and 3.0% milk protein. The dairy originally started as a 60-cow operation in the 1970's and has gone through 2 expansions over the years. The cows are currently milked 3 times a day in a double-16 parallel parlor. As they have expanded, facilities have been built to adequately accommodate all of the calves, heifers, and cows. Stall comfort on the dairy is good and the cows are exhibiting good lying rates. The farm has a great relationship with their nutritionist and do not currently have concerns with the nutritional content, mixing, or feeding of the diet for the milking herd. They would like to maintain a constant number of milking heifers and cows each month throughout the year.



Figure 1. Free stall barn at FFA Family Dairy. The barn is a curtain-sided free stall barn with an open ridge, a central feed alley, and fans that are set to automatically turn on at 78 degrees F.

Areas of discussion from Ms. Amondson:

Ms. Amondson has concerns about how well the reproductive program is performing on her dairy. She feels that there are opportunities for improvement and she would like you

to take a look at her records and the farm and make recommendations for improvements. The cow breeding records (Table 1) and a summary of the technician breeding records (Table 2) are provided to you. After evaluating the information, provide a summary of the positive and negative aspects of the breeding program on this dairy over the past year.

Before you get started, Ms. Amondson asks you to define some terms as she wants to make sure that she clearly understands the terms that are being discussed. Explain to Ms. Amondson what the following terms mean:

- Conception rate
- Heat detection rate
- Pregnancy rate

Table 1. Summary of heat detection and pregnancy rates over the past year.

21-Day Pregnancy Rate for FFA Family Dairy					
Date	# Eligible Past VWP	# Reported Bred or in Heat	Pct Heat Observed	# Preg	Pct Preg Rate
10/21/2015	125	78	62	26	21
11/11/2015	137	91	66	35	26
12/2/2015	122	78	64	31	25
12/23/2015	112	67	60	23	21
1/13/2016	125	71	57	23	18
2/3/2016	129	76	59	27	21
2/24/2016	118	73	62	26	22
3/16/2016	119	72	61	24	20
4/5/2016	121	82	68	30	25
4/26/2016	124	79	64	31	25
5/17/2016	119	74	62	27	23
6/7/2016	128	78	61	24	19
6/28/2016	143	81	57	21	15
7/19/2016	115	72	63	14	12
8/09/2016	118	70	59	13	11
8/30/2016	113	69	61	14	12
9/20/2016	121	77	64	--	--
10/11/2016	132	91	69	--	--
Average			62		20

All of the breeding for the heifers and cows is done by artificial insemination. Three different AI technicians breed cows on the farm, depending on their work schedule and when cows need to be bred. The breeding records of the technicians are shown in Table 2.

Table 2. Breeding records by technician from 10/1/15 to 8/30/16.

Technician	Number of animals bred	Number of animals confirmed pregnant	Percent successful
Kelly	504	185	36.7
Jody	227	92	40.5
Dana	480	111	23.1

Ms. Amondson has a few specific questions for you:

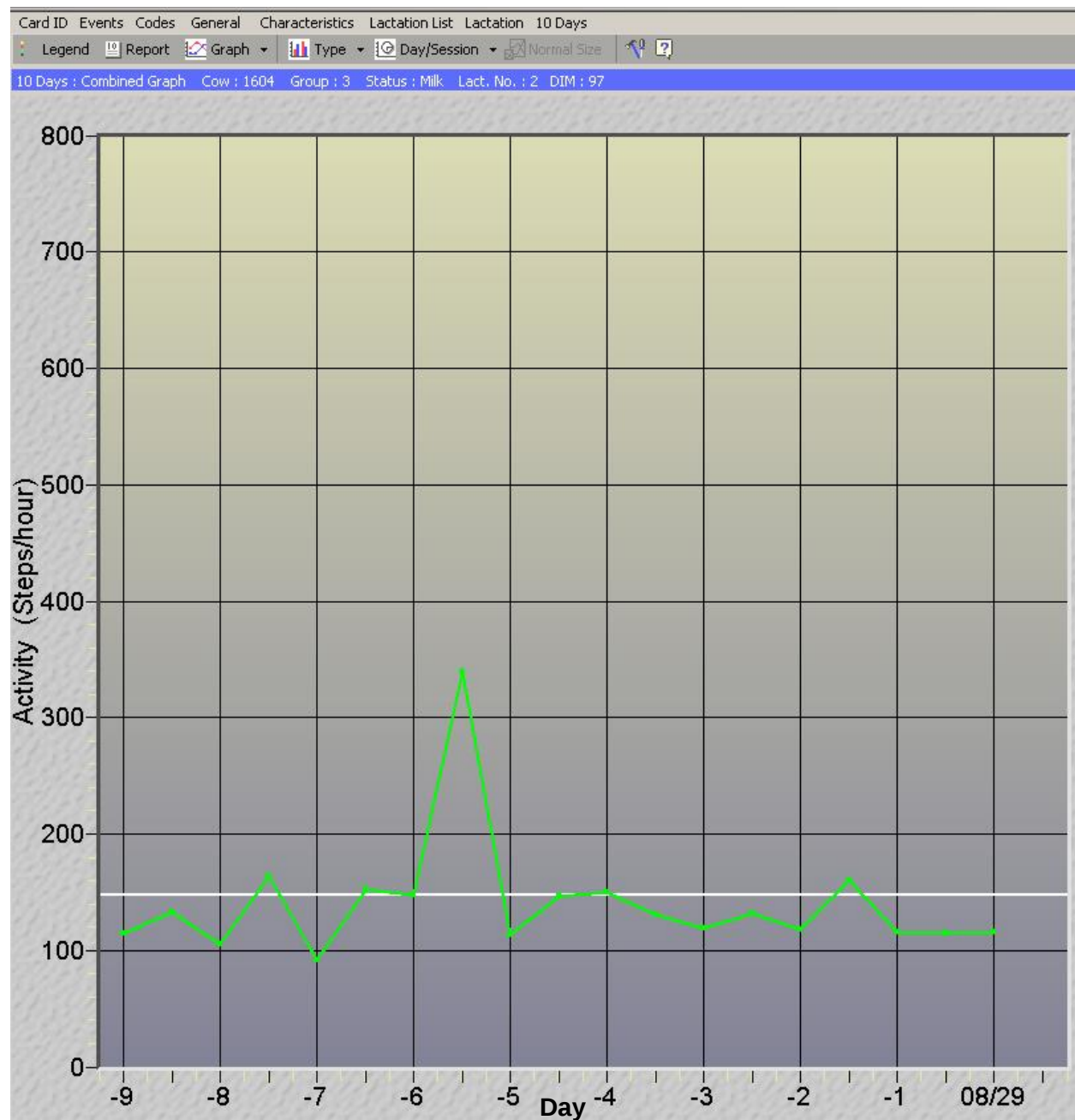
- 1.) Ms. Amondson has a group of virgin heifers she will be breeding over the next month. A new company, Best Bulls, Inc., just dropped off sire proofs for sires she could choose for heifers (Table 3). She would like your assistance to determine which would be the best sire for each of these three heifers:
 1. Heifer 123 – She would really like to improve the milk production on this genetic line.
 2. Heifer 456 – Breeding to a sire that would be most likely to pass on the best feet and legs.
 3. Heifer 789 – Breed this heifer to the highest index according to Holstein Association.

Table 3. Sire proof from Best Bulls, Inc.

Name	TPI	NM\$	MILK	Rel.	UDC	FLC	PL	DPR	CE
A1	2682	822	1945	76	2.12	1.58	6.6	1.6	6.1
B2	2598	724	972	76	1.68	2.28	5.4	2.8	5.4
C3	2624	747	1869	78	1.86	2.49	5.1	2.7	6.0
D4	2651	844	2136	75	1.39	1.61	6.3	1.2	7.3
E5	2602	705	970	75	2.97	2.09	5.1	0	7.4
F6	2631	762	1445	76	1.91	1.13	6.2	0.8	8.4
G7	2696	819	1353	77	1.38	1.92	5.3	2.0	6.6

- 2.) A pedometer system has recently been installed on this farm on a trial basis on some of the early lactation cows. Ms. Amondson asks you to look at the graph for a cow that is wearing one of the pedometers. According to this graph (Figure 2), when was this cow in heat (indicate the calendar date)? When should this cow have been bred in order to have the highest probability of the cow getting pregnant?

Figure 2. Graph of pedometer activity from cow 6543.



3.) As not all cows on the farm have pedometers, what signs would you look for to indicate which cows are in heat?