Calculation Homework Packet

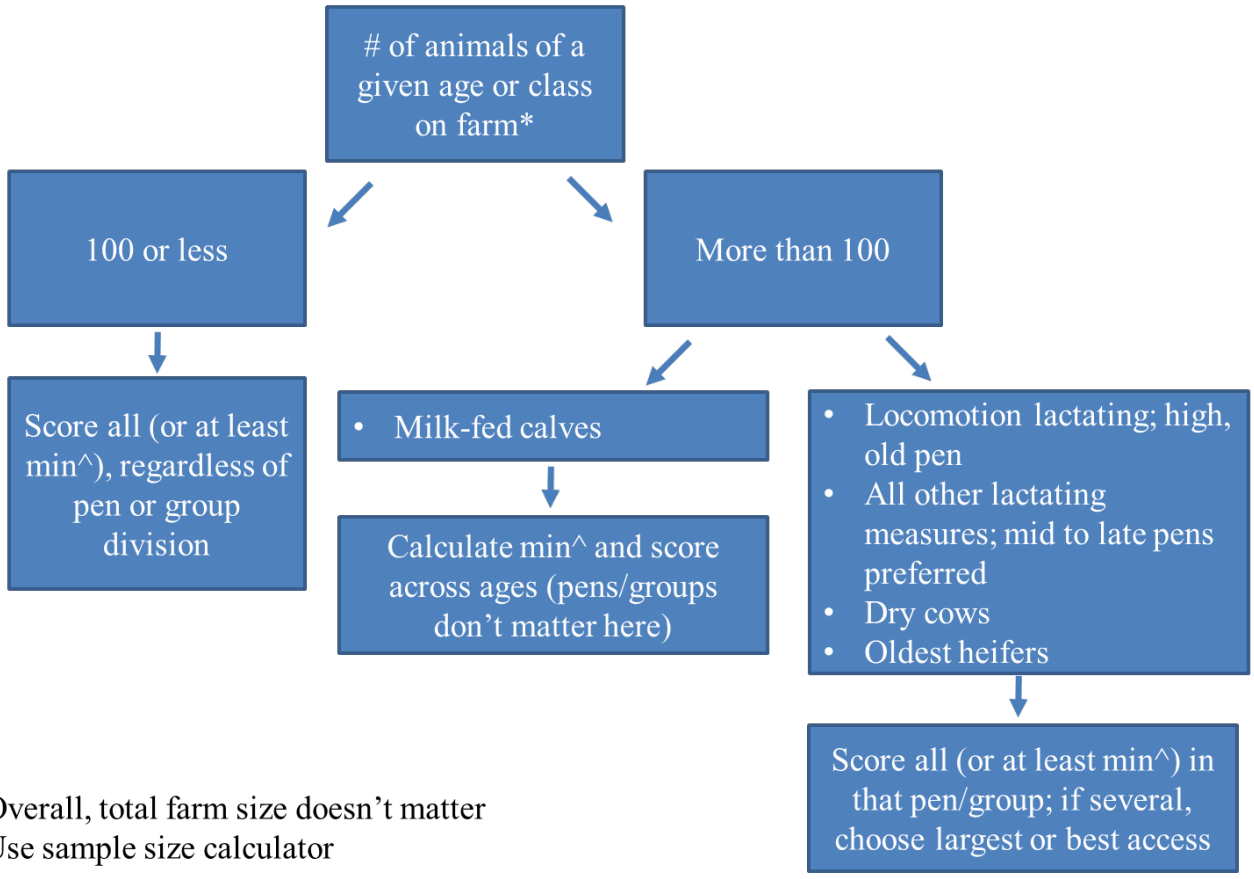
This homework packet is designed to help you practice sample size calculations, and somatic cell count (SCC) calculations, both of which you will need to do when auditing on-farm.

Please bring your answers to the in-person training session and be prepared to discuss.

Part 1: Sample Size Calculations

Instructions: Given the herd breakdown for the following farms, describe the ideal and minimum sample sizes you would take for each age group you would be required to sample if carrying out an audit.

Sample size decision tree



*Overall, total farm size doesn't matter
^Use sample size calculator

Example and Solution

Sweet Clover Farm has 65 lactating cows in tie stalls. There are 5 close-up dry cows kept in tie stalls and 10 far-off dry cows on pasture in a single group. They manage 60 heifers total and split them into 4 pens (8, 8, 12, 12 heifers, respectively) and one pasture (20 heifers). 18 calves are being raised in 2 group pens: 10 heifers are in one pen, and 8 bulls are in the other pen.

Notes: Solution

Type	Number	Pen	Ideal	Minimum	Special Considerations?
Lactating	65	Individual tie stalls	**65**	**57**	**57 comes from the sample size calculator**
Dry	15	Far-off on pasture, close-up in tie stalls	**15**	**15**	
Heifers	60	4 group pens and 1 pasture	**60**	**60**	**As each pen is less than 30 individuals, according to the sample size calculator, all need to be scored**
Calves	18	2 group pens separated by sex	**18**	**18**	

Problem 1

Green Grass Dairy has 700 animals total. They milk 400 cows, and keep them in 4 equal pens, grouped by production. They currently have 40 far-off dry cows together on pasture, and 10 close-up dry cows due in the next week that are kept in a bedded pack close to the office. They manage 150 heifers that are grouped by age. The youngest group of 50 was recently weaned off milk, the middle group of 50 is their breeding group, and the oldest is a bred group of 50 that they keep on pasture near their far-off dry cows. They are raising 100 calves in individual hutches that get fed at 6am and 6pm every day.

Notes:

Type	Number	Pen	Ideal	Minimum	Special Considerations?
Lactating	400	4 equal pens, grouped by production			
Dry	50	1 far-off (40), 1 close-up (10)			
Heifers	150	3 equal pens, grouped by age			
Calves	100	Individual hutches			

Problem 2

Corn Silk Dairy has 140 animals total. They are raising 22 calves in a group pen with an automatic calf feeder and 38 heifers in 3 pens grouped by age (the 4-9 month pen has 18 heifers, the 10-15 month pen has 12 heifers and the 16-22 month bred heifer pen has 8). They currently milk 68 cows in a herringbone parlor. All lactating cows are kept in one bedded pack pen. The 12 dry cows and pre-fresh heifers are kept in a separate barn split into a far-off and close-up pen. The day you visit, they expect to have 2 in the close-up half and 10 in the far-off half.

Notes:

Type	Number	Pen	Ideal	Minimum	Special Considerations?
Lactating	68	1 bedded pack			
Dry	12	1 far off (10), 1 close up (2)			
Heifers	38	3 pens, grouped by age			
Calves	22	Group pen			

Part 2: Somatic Cell Count Calculation

Instructions: Based on the SCC data provided in the table below, determine if the average SCC for the previous 3 and 12 months is < 400,000 (Item C2 Udder Health in the audit).

Below is the SCC data that you were provided upon visiting the Corn Silk Dairy operation in April 2018. Evaluate if the average SCC is acceptable for the past 3 and 12 months (all numbers provided are in thousands).

Month	March 2018	Feb 2018	Jan 2018	Dec 2017	Nov 2017	Oct 2017
SCC Counts	250, 520, 233	341,320, 289	360, 345, 375	340, 360, 355	400, 425	480, 390
Month	Sept 2017	Aug 2017	July 2017	June 2017	May 2017	April 2017
SCC Counts	465, 410, 395	386, 401, 455	410, 385, 240	320, 355, 280	260, 286, 310	260, 220, 210

Notes:

Answers:

Last 3 month average: _____

Last 12 month average: _____