

Colostrum Heat-Treatment Systems for Calves

Overview of Processing & Monitoring

Goal: Consistently deliver clean, high quality colostrum to calves.

Steps in the System:

- 1. Harvest and store raw colostrum before heat-treatment**
 - a. Udder prep / sanitation before milking
 - b. Cleaning / sanitation of all colostrum harvest, transfer or storage equipment
 - c. Process colostrum within 2 hours of harvest, or else chill (40°F) or freeze until ready to heat-treat
 - d. Prevent fermentation: process all chilled raw colostrum within 2 to 3 days
- 2. Heat-treat the colostrum**
 - a. Use batch pasteurizer or Perfect Udder® system (validated systems)
 - b. Use 140°F x 60 minute protocol (Do not allow temp to exceed 141.5°F)
 - c. Agitate constantly through the entire heat-treatment & cooling process
 - d. Transfer heat-treated colostrum to clean storage / feeding containers
 - e. Cleaning / sanitation of pasteurization equipment
- 3. Store colostrum until ready to feed to a calf**
 - a. Feed heat-treated colostrum within 2 hours of processing or chill until ready to feed
 - i. Refrigerate 40°F for up to 7 days
 - ii. Freeze for up to 1 year
 - b. Thaw / warm to feeding temperature of 100-105°F
 - c. Do not overheat when thawing / warming (Keep hot water bath to 120-125°F)
 - d. Feed 3-4 L within 2 hours (max 6 hours) of birth
 - e. Cleaning / sanitation of colostrum storage and feeding equipment

Monitoring the Colostrum Heat-treatment System:

- 1. Pasteurizer function**
 - a. Monitor times / temps reached with every batch (e.g. use chart recorder)
 - i. 140°F x 60 minute protocol (Do not allow temp to exceed 141.5°F)
- 2. Adequacy of raw & processed colostrum handling, as well as pasteurizer function**
 - a. Periodic (monthly) colostrum cultures for total plate count (TPC):
 - i. Pre-pasteurized colostrum:
Goal < 1 million cfu/mL
 - ii. Post-pasteurized colostrum:
Goal < 20,000 cfu/mL
 - iii. In front of calf:
Goal < 50,000 cfu/mL
- 3. Colostrum quality**
 - a. Total solids using Brix refractometer. Test raw colostrum (before processing)
 - i. > 22% on Brix scale predicts high quality colostrum (> 50 g/L IgG)
- 4. Passive transfer rates in calves** (Passive transfer is affected by quality, quantity, quickness and cleanliness of colostrum fed)
 - a. Test serum total protein levels in ≥ 12 clinically healthy calves between 1 to 7 days of age.
 - b. Serum total protein goals: $\geq 90\%$ of calves tested should be ≥ 5.2 g/dL