

Lamb Nutrition
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Ewe's milk vs. milk replacer

Cornell University researchers compare the options.

IT'S TIME TO LOOK AHEAD to next year's spring lambing season. Should you feed milk replacer or ewe's milk to the 2016 lamb crop?

New research from Cornell University provides insight to this query. The study, conducted by Ann DiPastina in conjunction with Dr. Debbie Cherney, looked to answer two questions: Does the composition of ewe's milk change through lactation? And, are the growth rates different between lambs on milk replacer compared to those on ewe's milk?

For the study, twin lambs were separated into two groups: lambs fed milk replacer and lambs left with the ewes. Milk replacer-fed lambs were housed in 0.9 x 0.9 meter pens in pairs and offered free-choice access to LAND O LAKES[®] UltraFresh[®] Optimum lamb milk replacer. Ewe-fed lambs were housed with their dams in 1.5 x 1.5 meter pens with access to a 0.6 x 1.5 meter creep area.

Read on to discover the team's findings.

Question 1: Does the composition of ewe's milk change through lactation?

The first phase of the research focused on the ewes and their milk production. The objective was to measure potential changes in milk composition.

"Consistency is a number one rule in lamb care," says Tom Earleywine, Ph.D., director of nutritional services for LAND O LAKES[®] Animal Milk Products. "Consistency in housing, nutrition and management can

prevent stress and keep lambs on the path to productivity."

With this concept in mind, the Cornell team collected 35-milliliter milk samples from each ewe six times per day at lactation days 18, 19 and 20 (Period 1) as well as days 38, 39 and 40 (Period 2). Samples were analyzed for percent fat, protein and lactose by time of day and stage of lactation.

"There was a significant difference in average protein and lactose percent between the two periods; Period 2 was higher in protein and lower in lactose than Period 1 milk," says DiPastina, adding that averages over time were equal to milk replacer components.

Differences were also noticed based on the time of day the milk was collected.

By volume, ewes in early lactation produced the highest milk volume at 4:00 a.m. and 8:00 a.m. with a drop between noon and 8:00 p.m. Production then increased again near midnight. A similar trend was found as lactation progressed but with a second peak occurring earlier in the evening at 8:00 p.m.

"While these nutrient levels are fixed in milk replacers, composition varies in ewes' milk due to many environmental factors, litter size, nutrition and breed," DiPastina found. "Fat percent has been shown to drop rapidly in the first three weeks of lactation with a gradual increase until 250 days in milk."

"This variation in milk components and volume may impact lamb growth rates due to inconsistency in nutrition provided to the lamb," says Earleywine.

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Question 2:

Are growth rates different between lambs fed milk replacer and ewe's milk?

Realizing the differences in consistency, the researchers next looked into growth rates between lambs fed milk replacer and ewe's milk.

As outlined earlier, lambs were randomly split into two groups: those offered free-choice UltraFresh® Optimum lamb milk replacer and those who remained with the ewe. Lambs were weighed daily at 8:00 a.m. until 30 days of age; creep feed and milk replacer intake were measured three times daily.

The results were on par with views on consistency, with average growth rates higher for lambs fed milk replacer (0.66 pound/day as compared to 0.62 pound/day for lambs reared on the ewe). The consistency in nutrition also helped fallouts match their counterparts.

"In spite of starting out smaller, on average, than the ewe-fed lambs at birth, the milk replacer fed lambs tended to reach the same final weight at day 30," says DiPastina.

Creep feed consumption between the two groups was nearly uniform; thus, the researchers point to consistency in nutrition as a driver in the increased growth rates.

"A potential reason for the elevated growth rates in milk replacer-fed lambs could be the consistency of energy intake," says DiPastina. "Results indicated that milk yield varies significantly throughout the day. Lambs' intake levels may have therefore fluctuated throughout the day as well."

To provide consistent nutrition from day one through weaning, Earleywine recommends feeding lambs a lamb-specific milk replacer, such as LAND O LAKES® UltraFresh® Optimum lamb milk replacer.

"UltraFresh® is formulated to match the components produced by the ewe at a consistent level each day," he says. "By feeding this milk replacer, we can better ensure the lambs receive the nutrients they require - each feeding."

To learn more about lamb nutrition and management, contact Dr. Tom Earleywine at (800) 618-6455 or TJEarleywine@landolakes.com, visit www.lolmilkreplacer.com or like [We Care for Lambs on Facebook](#).

Land O'Lakes Animal Milk Products is a proud supporter of the upcoming DSANA Symposium. Be sure to visit our booth and learn more about lamb nutrition and management.

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Recommended lamb feeding program

- **Day One:** Feed LAND O LAKES® Colostrum Replacement for Kid Goats and Lambs.
- **Day 2-30:** Feed LAND O LAKES® Ultra Fresh® Optimum lamb milk replacer and provide ample water supply to lambs at all times.
- **Day 14:** Start lambs on high-quality starter feed. Do not feed hay the first 3 weeks.
- **Day 30:** Lambs are ready to wean when they weigh 25 pounds and are eating ample quantities of starter feed. They should have consumed at least 20-25 pounds of Ultra Fresh® Optimum lamb milk replacer powder. This usually occurs around 30 days of age.

