LOW INPUT LAMBING & KIDDING:

Managing Lambing and Kidding Efficiently Without Sacrificing Animal Well Being

2nd edition

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To the farmers participating in the low input lambing/kidding study from 2009 to 2012

Your input, personal insights and long hours of record keeping and physical work are greatly appreciated and made this publication possible.

Additional copies of this publication can be ordered through the Cornell Sheep & Goat Extension Program, Room 114, Morrison Hall, Department of Animal Science, Cornell University, Ithaca, NY 14853

Introduction

In 2009 the Cornell Sheep and Goat Program embarked on a project to examine the inputs involved in lambing and kidding. The impetus for this project was threefold. During a recent sabbatical in New Zealand, Dr. Michael Thonney, the director of the Cornell Sheep Program, had been intrigued by the relaxed attitude of several New Zealand pasture based farmers toward lambing. Meanwhile, Dr. tatiana Stanton, Cornell University goat extension specialist, had been conducting a kidding mentoring program for beginning meat goat farmers. During this program she was surprised by the number of inquiries received from experienced meat goat farmers for a mentoring program of their own to allow them to study how more efficient farmers handled kidding so that it was not so labor intensive. Additionally, Natasha Pettifor came on board as a graduate student studying small ruminant behavior, specifically how lamb and ewe bonding is affected by different lambing management systems.

From 2009 to 2012, more than 40 sheep and goat farmers were interviewed in depth about their lambing and kidding management practices. During the same time period, tatiana Stanton switched to kidding out all the doelings in her meat goat herd on pasture while the Cornell Sheep Farm gradually introduced pasture lambing during their spring and summer lambing seasons.

This resource guide is a compilation of anecdotal recommendations gleaned from participating farmers and our own experiences. Chapter 1 is a general overview of the relationships between management inputs at birthing, season of birthing, mortality rates and herd performance. Chapter 2 discusses specific management practices as they relate to lowering inputs for barn lambing and kidding but is applicable in many cases to pasture birthing. Chapter 3 centers on management considerations to lower inputs during pasture birthing while still ensuring good animal welfare.

Chapter 1: Relationships Between Management Inputs, Season of Lambing/Kidding and Herd Performance

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Specific Objectives

1. Identify important health management practices for new sheep and goat farmers to adopt to improve animal performance at lambing and kidding.
2. Identify important nutritional management practices for new sheep and goat farmers to adopt to improve animal performance at lambing and kidding.
3. Describe how labor inputs, feed costs, and reproductive performance vary for different seasons of lambing and kidding.
4. Compare how the labor demands for different birthing tasks in winter vary across study farms.
5. Evaluate the relationship in winter birthing sheep and goat study farms between the hours spent per dam to check for and assist births with 1) herd sizes and 2) mortality rates.
6. Determine some reasons why excessive labor at birthing might not be conducive to improved herd performance.

Why Lower Your Inputs for Lambing and Kidding?

Experienced farmers, producer associations, and extension educators assisting new sheep and goat farmers often emphasize that management at kidding and lambing is critical. This is because most of us have encountered new farmers whose flock numbers increased faster than their expertise at handling birthing. We tend to assume that the more attention at birthing, the better, regardless of whether farmers are new or experienced.

Beginning farmers can obtain better herd performance if they spend time observing their animals to learn to quickly recognize symptoms of ketosis in pregnant dams, labors that are not progressing normally, or newborns bordering on hyperthermia and/or starvation. Encouraging new farmers to allocate extra time to their herds during the birthing season, often results in better management. Taking the time to adjust their feeding practices to provide for the increased nutritional demands of late pregnancy coinciding with decreased rumen capacity and to meet the sharp increases in energy, protein, and calcium demands shortly after birthing translates directly into improvements in herd productivity. Learning to tube-feed newborns, milk out a dam, or bottle feed an orphan may all help reduce herd mortality. Three common causes of death in suckling kids and lambs, white muscle disease, tetanus, and enterotoxemia can be countered by 1) understanding that because Selenium is deficient in most of the Northeast US, supplementing both Selenium and Vitamin E is crucial in late pregnancy and lactation, and by 2) implementing an effective *Clostridium C, D* and *tetanus* vaccination program (see **Table 1-1**).

Table 1-1. Recommended Enterotoxemia and Tetanus Vaccination Program

Age	Recommendation[1]
3-6 weeks before birthing	Vaccinate pregnant ewes and does
Shortly after birth	Give tetanus antitoxin to lambs or kids from unvaccinated dams for temporary protection.
Before 6 weeks of age	Optionally vaccinate young animals - two boosters still need to occur after 6 weeks of age to insure protection.
6 to 12 weeks of age	Administer initial vaccine to all young animals being kept in the herd or flock.
3 to 4 weeks later	Administer booster vaccine to young animals

[1]Newborns gain 10 times more defense from "passive immunity" – antibodies from their vaccinated mother's colostrum – than if their dams are not vaccinated during pregnancy or if they are vaccinated shortly after birth. In fact there is strong evidence that vaccination of lambs prior to 6 weeks of age will not result in immunity.

If increasing a new farmer's labor and management inputs at birthing help to combat poor birthing performance, then it's easy to assume that increasing these inputs will lead to even greater improvements for experienced farmers. However, increases in labor demands and feed requirements at birthing are cited by experienced sheep and goat farmers as major reasons why they do not expand or why they consider retirement. Continued increases in the labor spent handling birthing or in expenses incurred at birthing are not synonymous with improved management and may lead instead to increases in farmer stress. There are times when enough is enough. Experienced farmers may find themselves suffering from kidding or lambing "burnout".

The purpose of this handbook is to identify effective methods farmers can use to reduce labor inputs and feed costs at lambing and kidding without adversely affecting kid and lamb mortality and herd productivity.

How does Season of Birthing Affect Birthing Inputs?

Not all seasons of birthing are equal when it comes to the amount and types of inputs they require for success in the northeastern US (Figure 1-1). In 2009, seventeen farms, 6 of whom lambed or kidded in more than one season of the year, and three with more than one breeding group in a season, participated in a study to document labor and expenses at birthing. Nine farms raised goats while 8 farms raised sheep.

Figure 1-1. Not all seasons require the same amount of vigilance during lambing and kidding

Figure 1-2 shows that not unexpectedly, labor demands per dam during birthing time were higher in herds and flocks during birthings in the Winter '09 (range = 1.2 to 10.8 hr., mean 4.7 hr.), as compared to birthings in the spring (0.7 to 3.1 hr., mean 1.2 hr.) or fall (0.9 to 4.1 hr., mean 1.8 hr.). This was primarily because of the large amount of extra time spent by some farmers to check for and assist winter births as compared to spring or fall births.

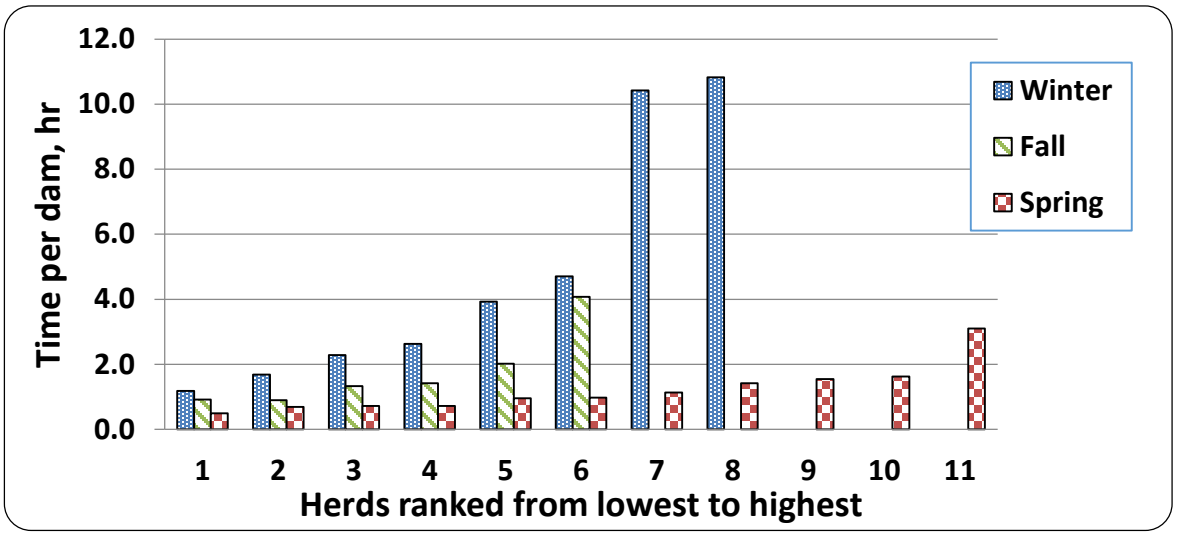

Figure 1-2. Extra hours of labor per dam for different seasons of birthing.

Additionally, feed costs (Figure 1-3) per dam per day were usually higher for winter than for spring although results were mixed for fall birthings. Feed costs were recorded from birth until weaning or marketing of suckling kids and lambs. For farms that did not wean, feed costs were recorded until the lamb or kid crop was approximately 10 to 12 weeks old.

The reason for lower feed costs in spring or fall birthing herds was the use of pasture by some participating farmers during birthing and/or nursing. All participating farmers were pasture based and attributed no additional cash outlays to the use of their pastures for pregnant or lactating dams, reasoning that the pastures would have been used by some portion of their herd or flock regardless of reproductive status and, therefore, that property taxes and fence depreciation were an inevitable farm expense. Five of 8 farmers reported utility costs due to the routine use of heat (heat lamps or heated rooms) to warm litters in winter while no farms reported heating costs in spring or fall. Bedding costs were also lower or absent in spring and fall.

Thus, all things being equal, one quick way to lower inputs is to lamb and kid in spring or fall instead of winter. Pasture based farms that are motivated primarily by tradition to lamb or kid in the winter should explore the option of birthing instead during warmer seasons if they want to reduce labor and feed demands.

Winter birthing is well justified if it results in increased income per dam or allows marketing to year-round lucrative buyer. It is also a wise use of resources if labor is needed for

other enterprises in the spring, summer, and fall and is most efficiently employed in the winter by allocating it to barn lambing or kidding.

Reproductive performance also tends to be better for ewes and does bred to give birth in the winter compared with other seasons. This is reflected in the weaning percentages (young weaned or marketed prior to weaning per dam) of the farm records recorded in 2009. The percentage of young weaned per dam was lower for fall birthings (115 to 186%, mean 146%) as compared to winter (141 to 216%, mean 183%) or spring birthings (127 to 200%, mean 163%). This was a result of fewer newborns delivered per dam (Figure 1-4) rather than increased mortality rates from birthing until weaning. This corresponds to previous studies indicating that the main disadvantages of fall birthing include smaller litter sizes as well as reduced conception rates. Ewes and does giving birth in the fall need to conceive when the days are getting longer from March 21st to June 21st. Thus they must breed out-of-season and many breeds will not cycle in these months.

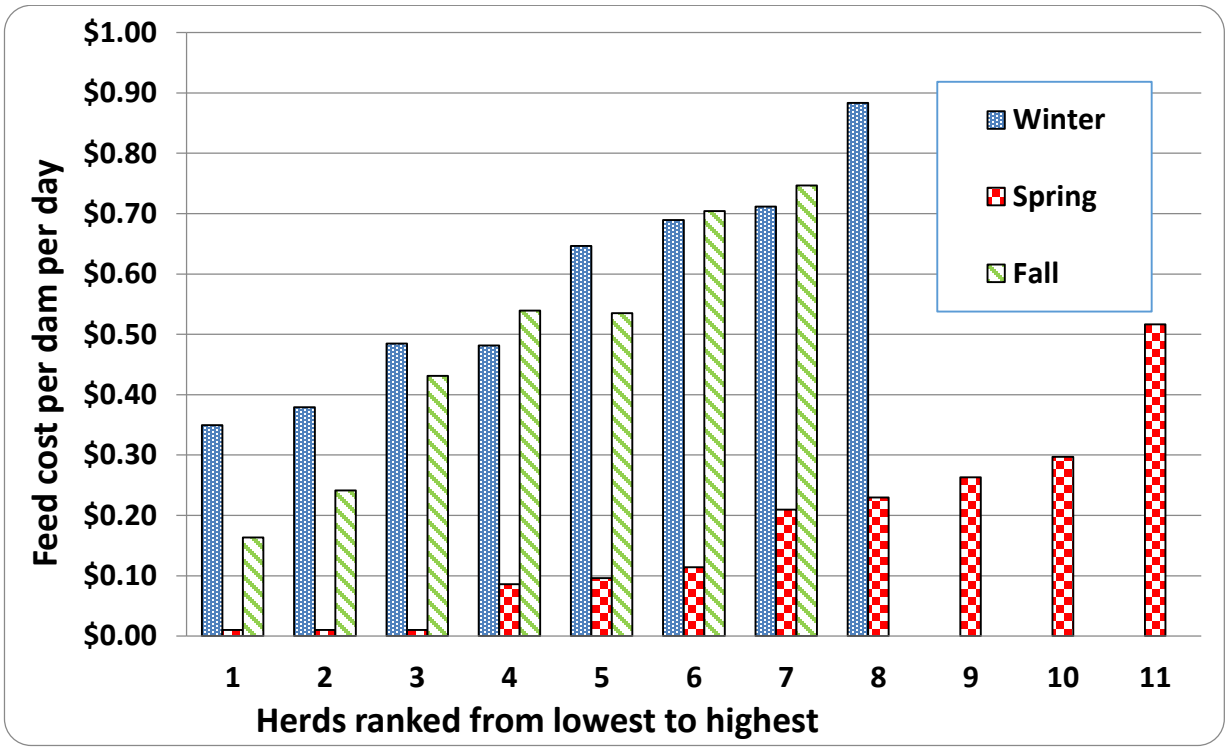

Figure 1-3. Daily feed costs per dam for different seasons of birthing

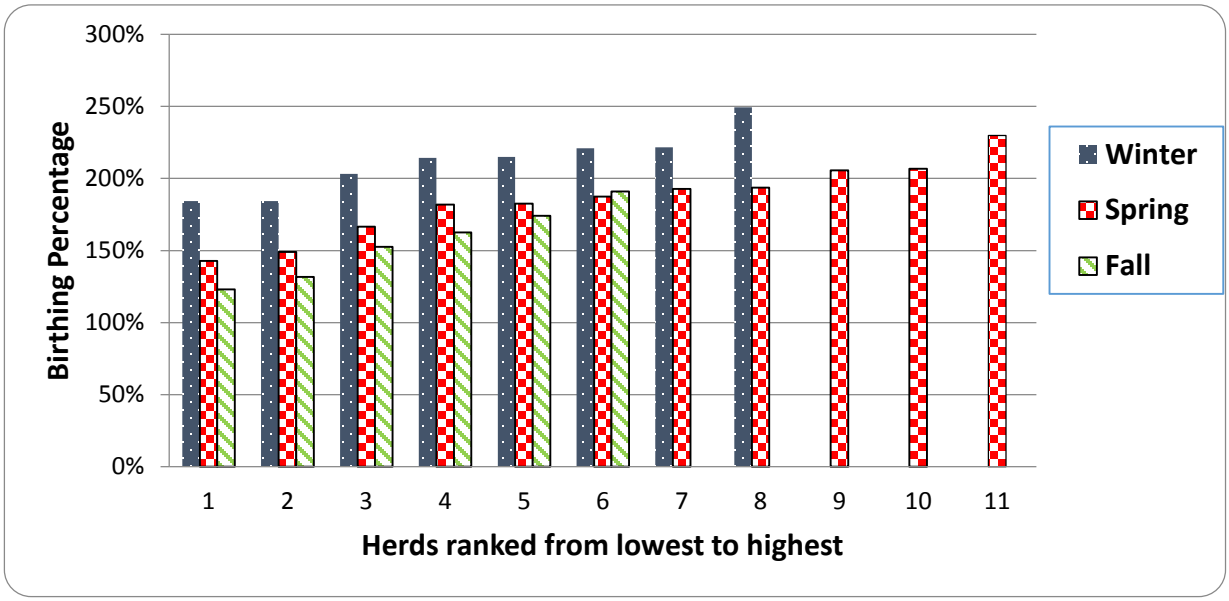

Figure 1-4. Lambing/Kidding percentage for different seasons of birth.

It is very important to observe that there was substantial variability in labor demands and feed costs in the farms referenced in the above Figures within the same seasons of birthing. **Regardless of what season a farmer chooses to kid or lamb in, management strongly influences labor needs and feed costs.**

How Does Labor Affect Mortality Rates?

How much does labor at birthing time affect kid and lamb mortality? In the winter of 2009, some of the case study farmers worked an extra 12 to 15 hr./day on-farm during birthing as compared to as low as 2 hr./day for other farmers. Labor during birthing time was defined as the extra labor expended on the herd that would not have been expended if birthing was not going on. Labor was generally measured from the time birthing checks started until the last animal in that birthing group lambed or kidded. We might expect labor demand per day to increase as the number of dams giving birth increases. However, there was a slight linear trend for the demand for extra labor to decrease as herd size increased (Figure 1-5). This may occur because 1) farmers with larger herds tend to spend more time on the farm already regardless of whether birthing is going on or 2) there was a larger concentration of animals birthing simultaneously. Smaller herds (< 50 does or ewes birthing) varied widely in labor demands during winter

birthings with some farmers spending 12 to 15 extra hr./day as compared to others spending only 2 to 3 extra hr./day, despite similar mortality and growth rates.

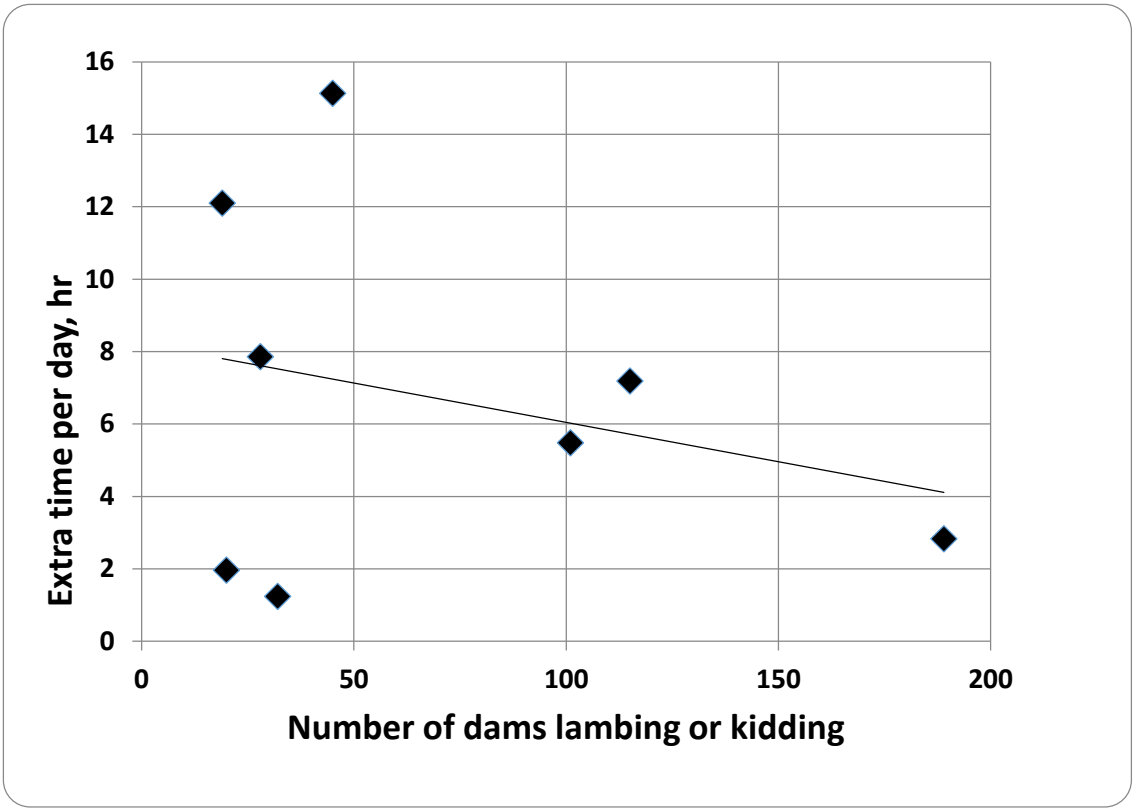

Figure 1-5. Relationship of herd size to extra hours of labor per day for winter birthing.

There were noticeable differences in the time farmers spent on various management tasks such as birth checks, artificial rearing, and transitioning dams and offspring from pregnancy to lactating areas during Winter 2009 (Figure 1-6).

Four farms (Goat 1, Goat 2, Goat 3 and Sheep1) attributed the bulk of their extra time to checking for births and assisting births. The other four farmers also attributed a noticeable portion of their time to this activity. In contrast, activities such as creep feeding and readying dams and facilities for birthing seemed to be very time effective. Other activities that took up an appreciable amount of time for most farmers in winter were taking care of litters in claiming pens (jugs), dealing with "problem" animals (sick, mis-mothering, severe dystocia, bad udders), artificial rearing, and management tasks associated with kids or lambs such as ear tagging or tail docking.

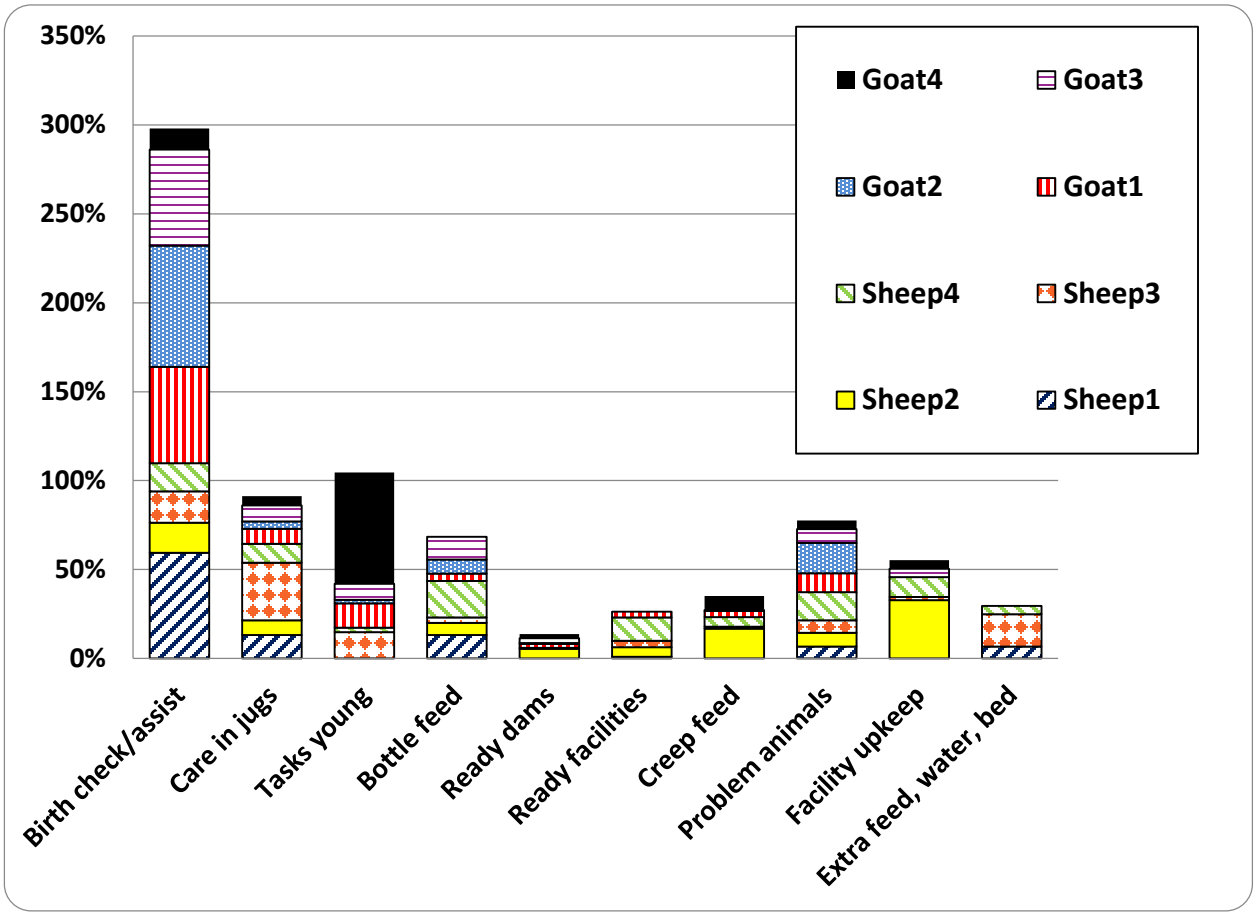

Figure 1-6. Percentage of time spent on different birthing tasks in winter.

Kid tasks that seemed to take the most time were disbudding and tattooing. In contrast, sheep and goat farmers generally reported that castrating, docking, ear tagging and weighing took far less time particularly if done in the claiming pen (jug) or shortly after birth. Farmers who tattooed kids while still young enough to still be in jugs reported far less time for this activity than farmers who waited until kids were older and harder to restrain.

All participating farmers in 2009 were experienced. For these farmers, spending a lot of extra time per dam checking for birth and assisting births did not necessarily result in reduced mortality rates in winter for dams at birth, offspring at birth, or offspring at 1 to 7 days of age, and was accompanied by increases in the percentage of offspring artificially reared (Figure 1-7).

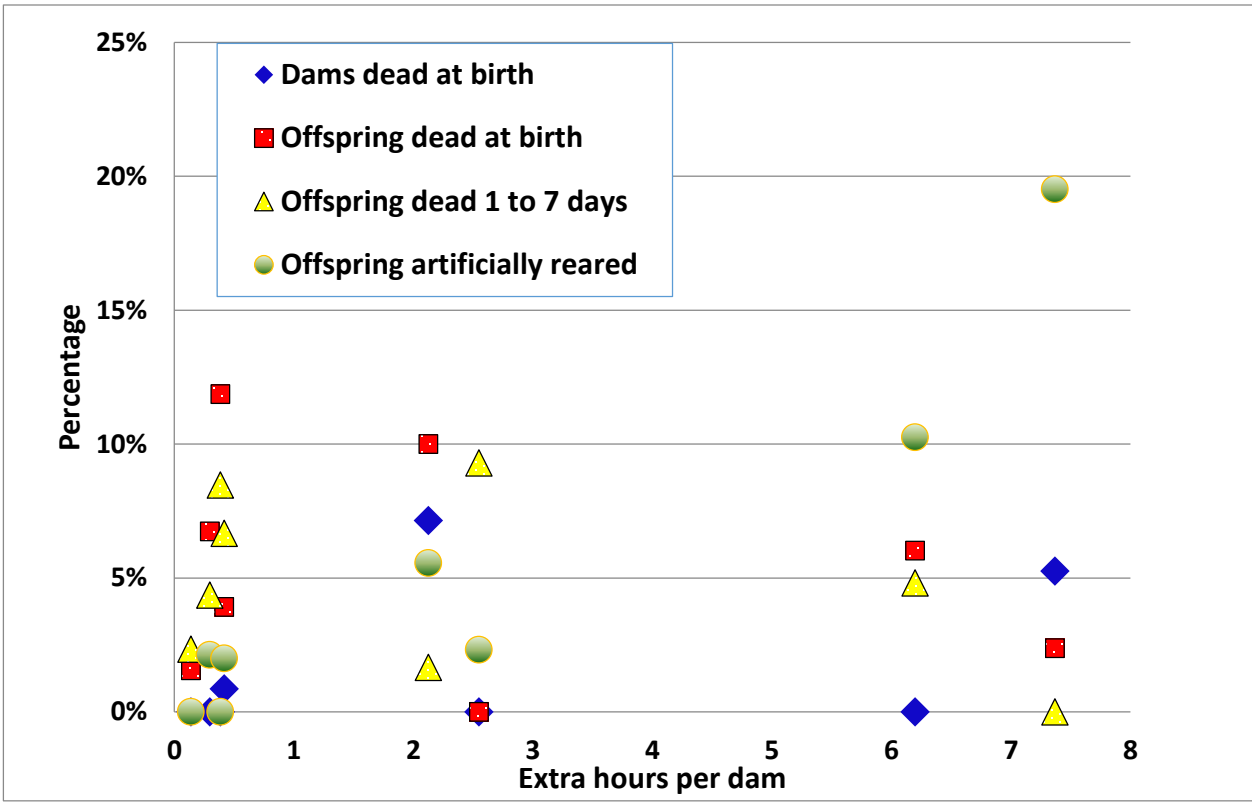

Figure 1-7. Relationship of hours spent per dam checking and assisting births in winter to herd productivity.

The farm with a lamb mortality at birth and from Day 1 to Day 7 of 11.9% and 8.5% respectively (Figure 1-7; Table 1-2, second row) had Cache Valley Fever with its accompanying severe birth defects leading to inevitable increases in stillbirths and early death.

The first and third sheep farms listed in Table 1-2, had very similar lamb mortality rates at birth (6% versus 6.7%) and at Day 1 to 7 (4.8% and 4.4%). However, 6.2 hours per dam were spent checking for and assisting births on the first farm compared with only 0.3 hours per dam on the third farm. After taking into account that the third farm listed in Table 1-2 was handling three times as many lambs, the differences in labor efficiency were substantial.

Table 1-2. Information on eight participating farmers in Winter 2009

Species	Breed[1]	# of dams	Time spent checking for or assisting births, hr/dam	Lambing/kidding (includes stillbirths)	Stillborn (dead on arrival)	Dead, day 1 to 7
Sheep1	Finn	45	6.20	184% (83 lambs)	6.0%	4.8%
Sheep2	Dorset crossed w/ EF or IDF	32	0.39	184% (59 lambs)	11.9%	8.5%
Sheep3	FD, FD crossed w/ IDF or Romanov	101	0.30	250% (252 lambs)	6.7%	4.4%
Sheep4	FD, FD crossed w/ Romanov	115	0.42	221% (255 lambs)	3.9%	6.7%
Goat1	Boer	20	2.55	215% (43 kids)	0.0%	9.3%
Goat2	Boer	19	7.37	221% (42 kids)	2.4%	0.0%
Goat3	Boer	28	2.13	214% (60 kids)	10.0%	1.7%
Goat4	Span, Span crossed w/ Kiko, Sav, Boer	189	0.14	203% (384 kids)	1.6%	2.3%

[1] **EF = East Friesian, FD = Finn Dorset, IDF = Ile de France, Span = Spanish, Sav = Savannah**

Figure 1-8. Early detection can save weak kids

Observational skills are helpful at diagnosing common health problems, such as ketosis, early. Such skills help reduce labor spent coping with these problems, emphasizing that time spent on prevention and early treatment is well justified. Regular birthing checks are also very helpful in providing early detection of dystocia problems and mis-mothering issues, and quick treatment of weak or hypothermic newborns. Knowing what a normal delivery looks like is very helpful to new farmers and we have slide shows available of kidding, lambing, and management tasks such as tail docking, etc. to help beginning famers. Another valuable kidding resource for new meat goat farmers is the "Kidding Mentoring Handbook."

However, being present at every birth does not necessarily ensure the survival of either newborns or dams. Management factors related to the health of the fetus and pregnant dam prior to birthing are much stronger determinants. Excessive time spent checking for and assisting births can lead to farmer exhaustion without necessarily improving survivability of dams and newborns.

Suggested Activities

1. Discuss last year's lambing or kidding seasons with your family, farm employees, or another sheep or goat farmer and identify what, if any, activities or problems seemed most stressful. Discuss possible methods to reduce this stress in the future. Include both "rational" and "ridiculous" solutions to encourage spirited discussion.
2. Check over your late pregnancy and lactation diets for either last year or the upcoming year and calculate estimated daily feed cost per dam.
3. Think back on your more recent lambing or kidding season and write down estimates of hours spent on various birthing tasks. Keep these estimates in mind during your next birthing season to compare with actual values.