Feedstuffs, May 14, 2007 **Feedstuffs Reprint**

Calf/heifer continuing education needed

THE 11th annual National Dairy Calf & Heifer Conference was held March 20-24 and was sponsored by the Professional Dairy Heifer Growers Assn. While the conference was held in California last year, it was held in Burlington, Vt., this year and just missed a snowstorm. There were about 420 dairy producers, calf and heifer raisers and allied industry personnel in attendance.

Significantly, the name of the organization was changed to the Dairy Calf & Heifer Assn. As Steve Bechard, the president, said, "Many people in the dairy industry have perceived that our organization is an exclusive group for contract heifer growers. Our mission is to assist the dairy industry in raising high-quality dairy replacements. That includes everyone who raises dairy calves and heifers, whether they are contract growers or dairy producers who raise their own replacements."

Bottom Line

with
AL KERTZ*

1. Zone distribution of calves

	Zone									
	2	3	4	5	6	7	8	9	10	11
Age range, days	67-110	111-161	162-219	220-272	273-332	333-406	407-483	484-546	547-609	610-650
Ending bodyweight, lb.	255	361	469	574	683	837	936	1,053	1,178	1,255

2. Performance by zone

	Calves moved after weaning		
	One week later	Immediately	P-value
Bodyweight at exit from zone 1, lb.	172.4	166.5	< 0.05
Daily gain in zone 1, lb. per day	1.62	1.66	0.30
Bodyweight at exit from zone 2, lb.	246.0	247.9	0.60
Daily gain in zone 2, lb. per day	1.77	1.99	0.01

3. Effect of respiratory incidence on heifer performance

	Respiratory incidence						
	0	1	2	3	4	5	P-value
Final bodyweight, lb.	1,376	1,363	1,376	1,378	1,411	1,317	0.21
Final age, days	661	665	671	666	643	670	0.03
Daily gain, lb.	2.12	2.09	2.10	2.15	1.85	1.44	<0.001

Pre-conference seminar

A pre-conference calf seminar was held addressing topics on milk replacer quality, feeding clean colostrum, management of on-farm pasteurizers, calf starters and optimizing calf growth.

Sandra Godden (2007) of the University of Minnesota indicated that clean colostrum is likely a major issue on many dairies. Harvesting is the first route of bacterial exposure to calves. In addition, bacteria block immunoglobulin G absorption.

Goals for colostrum are total plate counts of less than 100,000 colony-forming units (cfu) per milliliter and total coliform counts of less than 10,000 cfu/mL. There are three sources of bacteria in colostrum: those shed directly from the udder; contaminated equipment such as buckets, bottles and feeding utensils, and bacterial proliferation in improperly stored colostrum. Colostrum is not only an excellent source of nutrition for calves, but bacteria do very well on it, too.

To have optimal colostrum, the following steps are necessary: clean udder preparation; sanitized equipment for collection, storage, feeding, etc.; do not pool, and refrigerate within two hours (use in three days) or freeze quickly. Godden's work on pasteurizing colostrum has been previously reviewed (Kertz, 2006).

Bob James (2007) of Virginia Tech shared some of his experiences and insights with managing on-farm pasteurizers in the context of optimizing growth and health while minimizing risk and cost as the goal of a calf-rearing program. The first dimension is that pasteurization does not sterilize milk. Between 98 and 99% of the bacteria may be destroyed, but if total plate counts exceed 2 million cfu/mL to begin with, a post-pasteurization goal of 20,000 cfu/mL may not be achieved.

Furthermore, waste milk must be treated with the same care as saleable milk, or a false sense of security with pasteurized waste milk will be realized. Factors include: collecting and cooling waste milk as soon as possible after milking, following the pasteurizer manufacturer's specifications without shortcuts to save time or money, cooling quickly to 110°F and feeding as soon as possible or cooling to less than 40°F within an hour until feeding (plate counts have been found to exceed 100,000 cfu/mL within an hour of pasteurization if receiving tanks/buckets/bottles are not clean) and properly sanitize receiving vessels and pasteurizers.

Consistent quality control must be established and followed, which should include periodic sampling and analysis of pre- and post-pasteurization samples and from the last calf fed the pasteurized waste milk.

Other issues are managing nutrient content and supply variations. As the old saying goes, you cannot manage what you do not measure. Last, determining the true cost of pasteurizing waste milk should be fully burdened and include opportunity costs of waste milk that could not be sold.

There are several software programs available that can help make these assessments, such as part of the package within the Raising Dairy Replacements CD at www.mwpshq.org/catalog.html developed by Dick Wallace at the University of Illinois.

The last presentation in this calf seminar was by Alex Bach of Spain (2007b) and included data from a large calf/heifer ranch in north central Spain (in full disclosure, I consult for this ranch and was a co-author on this and another later paper). The operation has 6,000 heifers with an average starting age of 11 days through about 21 months of age and from more than 140 dairies. Its distribution by zones (groups) is shown in Table 1, except for zone 1, which is the pre-weaned group.

Various scenarios are captured in the text, such as the relationship between age and bodyweight at calving and projected first-lactation milk production, effect of physical form of starter on calf performance and starter intake, age at weaning relationships, some welfare/health aspects and evaluating a strategy of moving calves from individual hutches to a group super-hutch right after weaning or a week later. The latter issue is related to what I commonly recommend: that calves stay in the hutch after weaning for another two weeks in order to develop greater starter intake and undergo less change/stress when moved into their first group.

At first glance (Table 2), it appears that calves (n = 280) did better ($P < 0.01$) in zone 2 when they were moved from zone 1 immediately after weaning, contrary to what might be expected.

However, several other factors need to be considered. First, these calves averaged 10 days of age when entering zone 1, where they were fed milk replacer until fully weaned after another 49 days. So, they grew very well but were right at two months old.

Second, the calf hutches were very well bedded with straw but were not all that large for hutches with calves now at two months of age. So, it could well be that the calves that stayed another week in the hutch got rather scrunched for room. If so, their performance suffered (they only gained 6 lb. more in the extra week they were in zone 1, or only 0.86 lb. of daily gain), which may have carried over some into zone 2.

If they also had some further respiratory issues due to being scrunched and somewhat stressed, that would impair performance, too. This situation is still being evaluated and supports the need to consider other factors when assessing performance that might be unique to a particular operation and setup.

Conference

The regular conference program addressed a wide range of topics, some with producer panels, like economics, electronic identification, reproduction, diseases, lighting, managing stress and facilities.

In his second presentation on using technology and records to make management decisions, as an example, Bach (2007a) illustrated the effect of respiratory incidence on heifer (n = 2,771) performance (Table 3).

Heifers were checked daily for respiratory incidence and aggressively treated in order to minimize any effects. Still, as the number of respiratory incidences increased, daily gains were reduced ($P < 0.001$), and thus, heifers took longer ($P < 0.03$) and incurred even greater costs to reach their final bodyweight even though final bodyweight did not differ. If only bodyweight were measured, the impact of respiratory incidence would not have been noted.

Sheila McGuirk (2007b) discussed troubleshooting calf disease problems and attributed the following factors as closely related to problems when calves did not consistently have a good colostrum program:

- Time in the calving pen exceeds one hour;
- Time to milking calving cows exceeds six hours;
- The bacterial contamination of colostrum is high (goal is ≤ 100,000 cfu/mL);
- Colostrum contains additives (colostrum supplements or replacements — mixed as directed — should be fed as a separate meal), and
- Three (for Jerseys) or four quarts of colostrum are not delivered within the six-hour window of efficient absorption.

In a later session, McGuirk (2007a) relied on a study with barn ventilation in winter, as previously reviewed (Kertz, 2007), to illustrate the effect of housing on respiratory problems.

The Bottom Line

Continuing education is needed to learn or be updated with newer knowledge of issues that face commercial calf/heifer growers or dairy producers and allied industry.

References

Bach, A., J. Ahedo, A. Kertz and J.L. Juaristi. 2007a. Using technology and records to make management decisions. Proc. 11th Annual Dairy Calf & Heifer Conf. p. 56-65.

Bach, A., M. Terre, J. Ahedo, A. Kertz and J.L. Juaristi. 2007b. Optimizing calf growth. Proc. 11th Annual Dairy Calf & Heifer Conf., Pre-Conf. Calf Seminar. p. 81-92.

Godden, S. 2007. Practical methods of feeding clean colostrum. Proc. 11th Annual Dairy Calf & Heifer Conf., Pre-Conf. Calf Seminar. p. 39-47.

James, R.E., and M.C. Scott. Management and economics of on-farm pasteurizers. Proc. 11th Annual Dairy Calf & Heifer Conf., Pre-Conf. Calf Seminar. p. 49-60.

Kertz, A.F. 2006. Pasteurized colostrum results warrant trials. Feedstuffs, Sept. 18. p. 12-13.

Kertz, A.F. 2007. Proper ventilation alleviates respiratory issues in calves. Feedstuffs, Jan. 8. p. 11.

McGuirk, S.M. 2007a. Respiratory health in calves: Impact of housing. Proc. 11th Annual Dairy Calf & Heifer Conf. p. 149-150.

McGuirk, S.M. 2007b. Troubleshooting disease problems in calves. Proc. 11th Annual Dairy Calf & Heifer Conf. p. 87-92.