

KNOW THE FACTS

There's a wide range in the levels of protection offered by competing Lepto hardjo-bovis vaccines. And if you compare labels, it's easy to see that all vaccines are not equally effective in protecting against Lepto hardjo-bovis infections.

The USDA grants label claims based on efficacy data collected by each vaccine manufacturer. And SPIROVAC® has earned the highest level of protection granted by the USDA—prevention of infection—against Lepto hardjo-bovis.

SPIROVAC was the first Lepto vaccine granted the prevention of infection with demonstrated 12-month duration of immunity. This is important, because infected animals can continue to shed the bacteria, on average, for 8 months.^{1,2} Other vaccines may not help protect while infected animals are still shedding, thus repeating the cycle of disease all over again.

Protect your herd from Lepto hardjo-bovis and its effect on reproduction with the highest level of protection available.

To learn more, visit dairywellnessplan.com.

 **Spirovac**
One Vaccine. Best Protection.

Dairy Wellness Makes a Difference™

 Pfizer Animal Health

1 Leonard FC, Quinn PJ, Ellis WA, et al. Duration of urinary excretion of Leptospires by cattle naturally or experimentally infected with *Leptospira interrogans* serovar hardjo. *Vet Rec* 1992;131:435-439.

2 Thiermann AB. Experimental Leptospirosis infections in pregnant cattle with organisms of the Hebdomadis serogroup. *Am J Vet Res* 1982;43:780-784.

Dairy Wellness Makes a Difference is a trademark and SPIROVAC is a registered trademark of Pfizer Inc. ©2007 All rights reserved. SPV07006

Chilling fast is cool for colostrum, not bacteria

by Maya Kuratomi and Sam Leadley

FEEDING colostrum to newborn calves is a well-known requirement to those raising healthy calves. And it's not only about quantity but quality. In addition to protein and immunoglobulin content as a measure of colostrum quality, cleanliness of colostrum is important, too. High levels of bacteria in colostrum reduce the calf's ability to absorb the colostrum. Also, bacteria in colostrum can be the starting point for infection.

Bacterial contamination of colostrum can occur both during collection and storage. The contamination levels can be quite significant.

For both convenience and feasibility, many dairies store colostrum before feeding it to calves. However, improper storage of colostrum allows bacteria to multiply exponentially and so bacterial contamination becomes an issue. At physiologic temperatures ranging from 90° to 100°F, bacteria numbers double every 20 minutes (see graph 1).

Bad news — good news . . .

The bad news to those raising calves is that this property allows minimally contaminated colostrum to become very contaminated in a short amount of time. The good news is that if colostrum is cooled to 60°F, the generation or doubling time for bacteria takes much longer, up to 150 minutes . . . at 40°F the doubling time is more than 24 hours! Therefore, rapid cooling of collected colostrum is important to maintain high-quality colostrum. We recommend cooling colostrum to 60°F within the first half hour after collection and to 40°F within the next two and one-half hours.

So how long does it take to cool colostrum? Our observational study examined the amount of time required to chill colostrum to 40°F in standard refrigerators in a variety of volumes, storage containers, and initial temperatures.

In our study we compared many variables:

- two initial colostrum temperatures, 90°F and 60°F
- three container types: calf nursing bottles, 1-gallon bottles, and 5-gallon pails
- different volumes of colostrum loaded into the refrigerators at one

time from 1 to 5 gallons

- manual and automatic defrosting refrigerators.

Type of refrigerator made little difference in cooling times. As long as a unit can get the internal temperature down to 40° and hold it there the refrigerator should be okay to use.

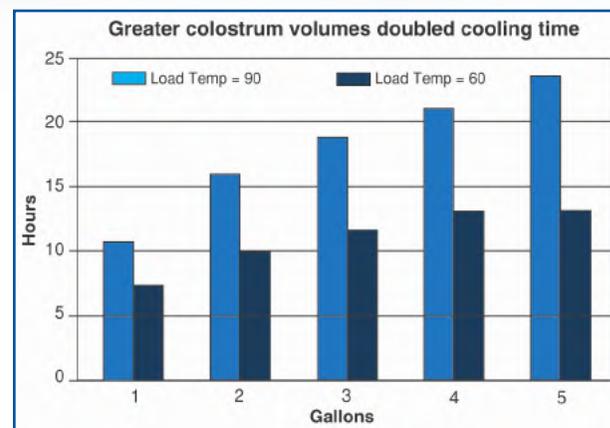
Type of container had little effect on cooling time. However, we loaded our nursing bottles and 1-gallon bottles with as little space between them as possible; just as loading is done on-farm. We can speculate that if we had left space between the bottles, they would have had more rapid cooling than the 5-gallon pails.

The volume of colostrum (from 1 to 5 gallons) made a huge difference in cooldown rates. As shown in Graph 2, moving to larger volumes (from 1 to 5 gallons) doubled the cooling time. In a separate

“This study tells us that simply putting hot colostrum in the refrigerator is not a viable way to preserve colostrum quality. Prechilling is required.”

analysis, when we compared the cooling time from 60°F to 50°F, the moving from 1 to 5 gallons tripled the cooling interval.

Lowering the initial loading temperature from 90°F to 60°F cut cooling times enough to significantly reduce bacterial growth (see Graph 2). With 1 gallon, the difference was 45 percent. At 5 gallons, the cooling time reduction between 90° and 60° initial loading temperature reduced the potential for bacterial growth 80 percent. Remember, the initial critical chilling interval is between cow body temperature and 60°. When we checked for cooling times for a refrigerator to chill 90° colostrum (bacteria growth doubling time about 25 minutes) to 60° (bacteria growth doubling time about 150 minutes), 5-gallon



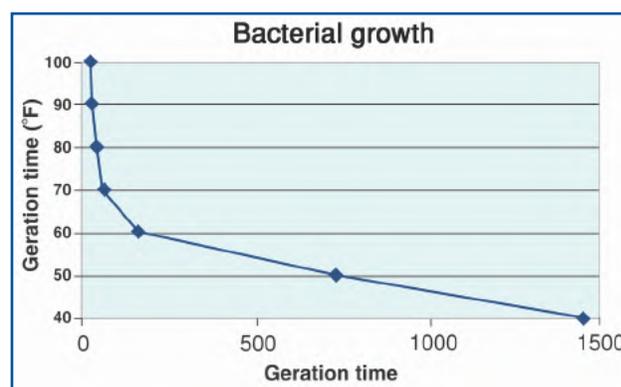
lots took between 8 to 10 hours.

This study tells us that simply putting hot colostrum in the refrigerator is not a viable way to preserve colostrum quality. Prechilling is required. A simple way to prechill colostrum is to float ice bottles in the fresh colostrum in a 1:4 ice-to-colostrum ratio. This method will chill hot colostrum to 60°F in 30 minutes.

If we can get the colostrum to 60°F within 30 minutes, our worst enemies, coliform bacteria, will not yet have started to multiply exponentially. Then, with the generation time at 150 minutes, we have that much lead time to get the colostrum chilled to 50°F where the next generation of bacteria will take about 12 hours.

This prechilling strategy will work very well for 1- and 2-gallon lots. As long as initial bacteria counts are low with standard plate count less than 10,000 and coliform count less than 1,000, the shelf life should be two to three days. However, for larger volumes of 3 to 5 gallons, we found cooling times for prechilled colostrum would allow two to three generations of coliforms to grow before chilling to 50°F. That means shelf life is going to be limited to no more than two days.

One innovative approach used by one of our clients is to not only drop a gallon jug of ice into the stainless



steel milker bucket immediately after collecting the colostrum (1:3 ice-to-colostrum ratio) but also to put the entire bucket including the ice jug into a chest freezer. This worked exceptionally well. All the lots we tracked cooled the colostrum to 40° within three hours. Another client uses one load of ice bottles for the first hour at the 1:4 ice-to-colostrum ratio and then puts in fresh ice bottles at the same ratio to get 40° colostrum within three hours. No refrigeration is used to chill colostrum in this instance. Both farms then bottle and refrigerate their colostrum.

Other research has looked into the efficacy of food-grade preservatives to reduce bacteria growth. Workers at the University of Minnesota found that the addition of potassium sorbate extended the generation time by about 10 times. That is, if the preservative is added

"We recommend cooling colostrum to 60°F within the first half hour after collection and to 40°F within the next two and one-half hours."

immediately to just-collected colostrum and mixed in thoroughly, rather than having a 20-minute doubling time for coliforms, the farm now has 200 minutes in which to chill the colostrum.

See www.atticacows.com in the Calf Facts section for additional procedural details for using potassium sorbate. Assuming good initial sanitation, this may be a viable option in the future for dairies storing colostrum that want to extend shelf life to six to seven days without pasteurization. 🐄

Illinois Dairy Days set

Meeting: 2008 Illinois Dairy Days

Dates and locations: January 3, **Eureka**, Eureka College, Cerf Center; January 4, **Arthur**, Yoder's Country Kitchen; January 8, **Quincy**, Adams County Farm Bureau Building; January 8, **Jerseyville**, Super 8 Motel (7:30 p.m.); January 9, **Okawville**, Community Club Building; January 10, **Breese**, American Legion; January 15, **Freeport**, Highland Community College; January 16, **Elizabeth**, Community Center; January 17, **Harvard**, Stratford Inn. All programs begin at 9:45 a.m., with the exception of Jerseyville. Commercial displays will be at all meetings except Jerseyville.

Topics: Presentations by University of Illinois extension dairy and veterinary specialists on building on milk protein, evaluating forage quality, economics of Illinois dairying, bacteria counts in raw milk, BST facts and fiction, EPA concerns on Illinois dairy farms, livestock regulations and EQIP, and University of Illinois dairy farm status.

Contact: Dairy Extension (217) 333-2624

Dairy market information at your fingertips

The University of Wisconsin-Madison's website, has been reconstructed to offer a broader compilation of prices, production, sales, stocks and other information, and to make it easy to find and compare virtually any combination of those data.

The comprehensive collection of dairy marketing information available is now on-line at <http://future.aae.wisc.edu>.

The new site houses its num-

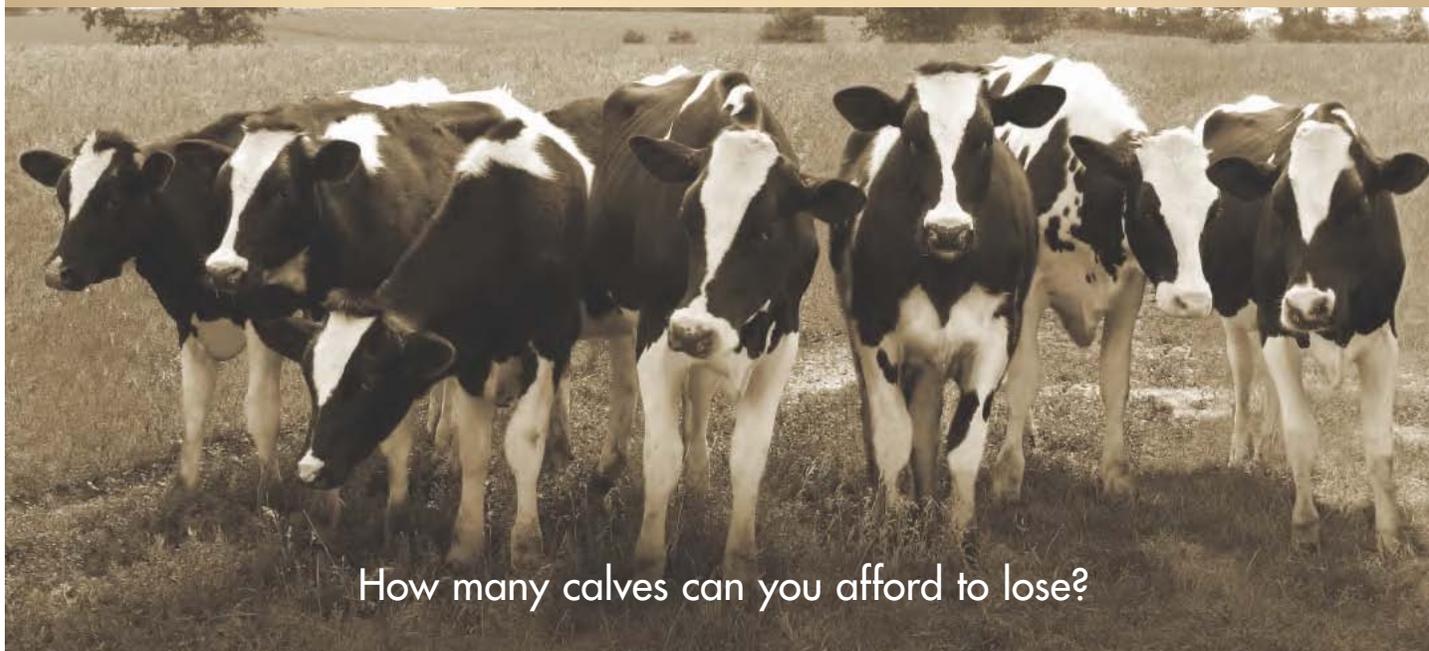
bers in a database that offers impressive on-line search and analytical tools that are quite easy to use—even by those who aren't conversant in the language of classified pricing and federal orders.

The website's database is kept up to date by an automated retrieval system that routinely pulls data from the websites of various government agencies. The automation makes it possible to

offer a much broader selection of data than was available on the old site. The database immediately creates a graph of the current year's data series.

The site is sponsored primarily by the Wisconsin Milk Marketing Board, UW-Extension, and a grant from the Western Center for Risk Management Education. For information, contact Brian Gould at (608) 263-3212 or bwgould@wisc.edu.

Lepto hardjo-bovis can cause early embryonic death.¹



How many calves can you afford to lose?

Hardjo-bovis is a lepto that lowers conception and causes missed pregnancies. Fortunately there's Spirovac.[®]

- Prevents hardjo-bovis infection, the lepto that impacts early reproduction in the United States.
- Prevents hardjo-bovis reproductive and kidney colonization and urinary shedding for up to 12 months.
- Offers convenience, with an L5 combination.

Get the whole story on the Spirovac line of products from your veterinarian or animal health supplier.

Spirovac[®]
One Vaccine. Best Protection.*