Maximizing Passive Immunity in Calves

5 Factors of a Calf Management program
1. Minimize stress of birth
2. **Maximize passive immunity**
3. Meet nutrient requirements of calf
4. Optimize rumen development
5. Maintain animal health

On average in the U.S. 7.8% of heifer calves born alive, die before weaning, and over 75% of calves will experience one bout of illness prior to weaning. The primary causes of calf-hood illness prior to weaning are scours/digestive issues and respiratory challenges.

**What are the costs of calf death and calf illness?**
- Reduction in net farm profits
- Decreased availability of herd replacements
- Decreased voluntary culling
- Potential limitation of genetic gain
- Decrease in future production

Newborn calves are born with an immature immune system that can not fight off disease. The newborn calf derives passive immunity - and the ability to protect itself from illness - by absorbing IgG from maternal colostrum (MC) provided within the first hours of life. In the calf, passively acquired immunity is important to the health of the calf until they are able to synthesize their own antibodies - around 6 weeks of age.

During the first 24 hours after birth, the intestines of the newborn calf are replacing fetal type cells with adult-type enterocyte cells. These fetal type cells are able to transport macronutrients - specifically IgG across the intestine to the blood during the first hours of life - thus allowing the calf to achieve passive immune transfer from colostrum.

To maximize passive immunity
- Calves should receive their first feeding of high quality colostrum within 4 hours of birth.
- The longer you wait, the less IgG the calf is able to absorb.
- The less IgG the calf absorbs, the more susceptible the calf is to pathogens (scours, respiratory challenges...)
- Calves should receive a minimum of 10% of their bodyweight in colostrum within the first 4 hours of life.

**What is high quality colostrum?**
- High quality colostrum contains greater than 50 mg of IgG/mL of colostrum.
- Is not contaminated with manure or foreign particles.
- Is not bloody or watery.
- Is from a healthy, disease free cow.

**How can you evaluate colostrum quality?**
- Test Colostrum to determine if it is high quality.
- Colostrum should register in the green level on a colostrometer (above 50 mg IgG/mL)
- Colostrum should be > 20% Brix on a refractometer.
- Visually Inspect colostrum.
- Make sure the colostrum being fed is clean and not contaminated.

**Cleanliness**
During the first hours of life, when the intestine is able to transport whole macromolecules from the gut to the bloodstream, bacteria and pathogens can also be passed directly to the bloodstream. To prevent the transport of pathogens to the bloodstream we need to take preventative measures, both in the calving pen and with colostrum handling.
- Make sure the calf is born in a clean pen.  
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When tillage begins, other arts follow. The farmers, therefore, are the founders of human civilization.  
- Webster, Daniel
**North County Agriculture Calendar of Events April 2013**

**Please Note:** Meetings are subject to cancellation due to insufficient registration and/or weather conditions. Please register so we can contact you if meetings are canceled.

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<th>Event</th>
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<tr>
<td><strong>Essex Dairy Day</strong></td>
<td>Kim Morrill, Regional Dairy Specialist and Jessica Smith from Quality Milk Production Services will be in Essex County to talk about dairy modernization, ways to cut costs on the farm, and how to get premiums for quality milk. There will be ample time for discussion and questions from the group. This is a great time to meet our 2 new dairy representatives. Food will be available. Please contact Anita Deming if you plan to attend 962-4810-ext 409 or <a href="mailto:ald6@cornell.edu">ald6@cornell.edu</a></td>
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<td><strong>Integrated Pest Management/FAMACHA</strong></td>
<td>Learn how to manage parasites on small ruminant operations, how to do fecal egg counts with microscope and how to use the FAMACHA procedure to check animals to determine treatment. Register with Betsy Hodge 315-379-9192, email Betsy at <a href="mailto:bmfs9@cornell.edu">bmfs9@cornell.edu</a> or with Rose Bartniss at <a href="mailto:rosesgoats@gmail.com">rosesgoats@gmail.com</a>. You can pay at the door.</td>
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<td><strong>Pro-Dairy Herd Health &amp; Nutrition Conference</strong></td>
<td>Herd Health and Nutrition Conference provides an opportunity for dairy producers, veterinarians, feed industry representatives and agriservice personnel to increase their knowledge of current herd health and nutrition management techniques while interacting with other professionals. The format will be a combination of PRO-DAIRY’s Fall Dairy Conference and Northeast Ag and Feed Alliance’s Ruminant Nutrition Conference. Contact Heather Darrow, Conference Coordinator at (607) 255-4478.</td>
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<td><strong>Farming in the Basin Twilight Meeting</strong></td>
<td>Join us for the first in a series of on-farm meetings that will focused on lake friendly farming practices and techniques. Cornell Cooperative Extension and the Lake Champlain Basin Program will be collaborating with other farm service agencies to highlight practices such as cover cropping, rotational grazing, precision agriculture, tile drainage, buffers and alternate water systems. This first meeting will be at a farm that currently uses cereal rye as a cover crop and spring forage. Please contact Peter Hagar at CCE Clinton County, 561-7450 or <a href="mailto:phh7@cornell.edu">phh7@cornell.edu</a>, for more information.</td>
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<td><strong>Chickens for Beginners</strong></td>
<td>If you have been thinking about adding some more living color to your yard and garden, Spring is the ideal time to think about chickens. With the growing interest in eating local foods, what is more local than harvesting eggs from your own chickens. If you are interested in raising chickens for pleasure or profit, eggs or meat, Cooperative Extension will be holding a workshop on Tuesday, April 23rd from 7-8:30 pm at the Extension office. We will cover the basics of chicken husbandry, housing, nutrition, and related topics. The workshop has a $5.00 registration fee. Contact Peter Hagar, Agriculture Educator at 561-7450 or <a href="mailto:phh7@cornell.edu">phh7@cornell.edu</a>. This is a repeat of the March class due to continued interest.</td>
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Agriculture News for the North Country

Maximizing Passive Immunity cont.

- Move the calf into a clean pen or hutch immediately after birth.
- Properly clean the teats prior to milking the dam. This is the first time in 6 weeks the cow has been milked and a lot of bacteria could be on the teats.
- Make sure all milking equipment is sanitized prior to milking.
- Make sure all buckets & bottles are clean.

**Feed colostrum within 1 hour of harvesting from the cow.** If you are not going to feed colostrum within 1 hour you can freeze colostrum in 1 gallon Ziploc bags.

To evaluate your colostrum management program and the health of your newborn calves, it’s beneficial to determine if your calves are achieving passive transfer. Passive transfer of IgG can be determined from blood collected from the calf after 24 h of age. Neonatal calves are classified as having failure of passive transfer if the serum total protein is < 5.0 (as measured on a refractometer - can be done calf side) or the IgG concentration is < 10 mg/mL (lab test) after 24 h of age. Failure of passive transfer (FPT) increases risk of death and illness due to increased susceptibility to pathogens and subsequent disease.

The most recent NAHMS reported that 19.2% of heifer calves had FPT and only 2.1% of U.S. dairy operations routinely measure passive transfer status of calves.

Improved colostrum management practices can reduce occurrences of FPT in calves, improve calf health and farm profitability.

If you would like additional resources on any of the information discussed in this article please do not hesitate to contact me. Kimberley Morrill, Ph.D, CCE NNY Dairy Specialist, kmm434@cornell.edu

Agriculture Energy Efficiency Program

NYSERDA offers assistance to identify and implement electric and natural gas energy efficiency measures for eligible farms and on-farm producers, including but not limited to: orchards, greenhouses, vegetables, vineyards, grain dryers, and poultry/egg. Farms must be a customer of a New York State investor-owned utility and contribute to the System Benefits Charge (SBC). Please check your farm’s current utility bill.

Request an energy audit, project implementation incentives, or both. NYSERDA will assign a FlexTech Consultant to perform an energy audit at no cost for audits up to $2,500. For more complex energy audits, exceeding $2,500, cost-sharing by the applicant will be required.

**Project Implementation Incentives are:**

- Provided up to 75% of eligible project costs and capped at $250,000. The farm must contribute at least 25% cash cost-sharing toward the project.

- Based on total project cost as reflected in invoices billed to the farm; Internal labor costs will not be included as project costs.

Ineligible Projects are:

- Projects with simple payback of less than 6 months
- Projects completed prior to application
- Projects may require NYSERDA to perform measurement and verification.

For more information and to get an application visit our website at nyserda.ny.gov/Agriculture.

Easter Sheep and Goat News for 2013

Western or Roman Easter is March 31st this year while Greek or Orthodox Easter is not until May 5th, 2013. Several livestock auctions will be offering special sales for lambs and kids as well as cull adults as Roman Easter approaches. Farmers can go to the Livestock Auction section of the Sheep & Goat Marketing Directory at http://www.sheepgoatmarketing.info/marketing_dir.php?col=categories to get information on how to contact various auctions in the NE US. Livestock dealers, packers and wholesalers and retailers of lamb and goat are also listed there. Click on the states you want to search as well as the category of lamb and goat buyer you wish to look up contact information for.

The education section of that web site also has several articles on evaluating lambs and kids and on marketing them through various channels.

America’s Great Outdoors Initiative (AGO)

In New York State, NRCS offers conservation funds to landowners, farmers, and private forestland owners in the Lake Champlain Watershed through the America’s Great Outdoors Initiative. Many partnerships are assisting NRCS with this conservation effort, including the New York State Department of Environmental Conservation (NYSDEC), the county Soil and Water Conservation Districts (SWCD), Audubon Society, and the Champlain Watershed Improvement Coalition of New York. The America’s Great Outdoors Initiative makes funding available through the Environmental Quality Incentives Program. EQIP-AGO funds are used to install conservation practices that prevent nutrients and sediments from reaching Lake Champlain and improve wildlife habitat around the lake.

The application batching date for Fiscal Year 2013 Environmental Quality Incentives Program (EQIP) - America’s Great Outdoors Initiative (AGO) is April 19, 2013. Contact the Clinton County NRCS office at 561-4616 for more information.