UF IFAS
UNIVERSITY of FLORIDA
Department of Animal Sciences

Dairy Update

Quarterly Newsletter **Spring 2023**

1000 Visitors at the 7th Family Day at the Dairy Farm

Albert De Vries, Izabella Toledo, Emily Miller-Cushon, and Diwakar Vyas

The Department of Animal Sciences held its seventh Family Day at the Dairy Farm on Saturday February 11, 2023. Family Day at the Dairy Farm is an open house for the public to visit the UF/IFAS Dairy Unit and meet and learn from students, staff, and faculty.

First held in 2012, Family Day at the Dairy Farm is designed to be educational for children and adults alike. An important objective is to show a real working dairy farm to the public and be transparent about dairy farming practices.

Fourteen stations and activities organized by faculty, staff, and students provided opportunities for visitors to watch cows be milked, pet calves, make butter, tour barn facilities, learn about nutrition, physiology, reproduction and how milk is produced, stored, and transported. Visitors also learned how UF/IFAS dairy research and Extension help dairy farmers produce quality milk while keeping their herds comfortable, healthy, and being stewards of the environment.

Florida Dairy Farmers, the Florida Department of Agriculture and Consumer Services, and Alachua County 4-H also had stations.

The event was again organized by faculty and staff of the Department of Animal Sciences, the staff of the UF Dairy Unit, and Florida Dairy Farmers Inc.

It took 60 volunteers, including undergraduate and graduate students, dairy faculty, and staff, to make this Family Day at the Dairy Farm a success. Volunteers helped with jobs like parking cars, registrations, giving directions, taking surveys, cleaning up trash, and answering questions from the public.

The event could not be organized without the help of our sponsors STgenetics, Florida Dairy Farmers, John L. Shadd Trucking, Gatorland Kubota, M&B Products, and the Institute of Food and Agricultural Sciences (IFAS).

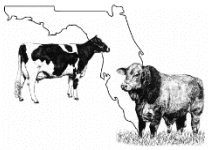
The 2023 event attracted 1000 visitors, despite a rainy week and rain in the forecast. Visitors appreciated the opportunity to visit the farm and learn about dairy.

No event was held in 2020 and 2021 due to the Covid pandemic. The event had to be cancelled in 2022 due to rain which made visitor parking infeasible.

2023 Family Day at the Dairy Farm was held on February 11. Photos courtesy of UF/IFAS Photography

For more information about Family Day at the Dairy Farm, contact Izabel Toledo at izatol@ufl.edu. Visit the event websites at https://www.facebook.com/FamilyDayattheDairyFarm/ https://animal.ifas.ufl.edu/events/familydayatthedairyfarm/

Proceedings of the 2023 Florida Ruminant Nutrition Symposium Online



The 34th Annual Florida Ruminant Nutrition Symposium was held in Gainesville on February 20-22, 2023. The program was held in-person for the first time since 2020. Over 260 people attended the symposium. The proceedings papers are now available at https://animal.ifas.ufl.edu/dairy/conferences--meetings/florida-ruminant-nutrition-symposium/

Proceedings of the 2023 Florida Dairy Production Conference Online

The 56th Florida Dairy Production Conference was held in Gainesville on December 1, 2022. This was the first time the conference was held since the 2019 conference. The 56th conference focused on heat stress, calf behavior, reproduction, and feed efficiency. The conference attracted over 150 participants from all corners of the Florida dairy community and elsewhere. The proceedings are now available at https://animal.ifas.ufl.edu/dairy/conferences--meetings/florida-dairy-production-conference/

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UF Dairy Science Club Visited Dairy Farms in Georgia and Florida

Camryn Farquhar

On April 1st, nine of our Dairy Science Club members spent the day visiting Brooksco Dairy and Southern Cross Dairy. From these visits, our undergraduate students could observe various aspects of the dairy cow management process, including feeding, milking, and housing. This experience allowed students to connect with concepts learned in the classroom and see how management strategies are applied in the daily operations of a dairy farm. Our students gained a deeper appreciation of the individuals who work hard to produce high-quality milk products for our consumption. By visiting dairy farms and learning from these experienced farmers and industry professionals, members gained valuable knowledge to help them succeed in their future endeavors.

During these tours, we were fortunate to see many aspects of the milk production process, such as calving, milking, and more! Each farm offered our students a new perspective on aspects of production, such as the various types of facilities and management practices that can be used. Isabell Revere, a second-year Animal Sciences student, shared her favorite part of the tour: "The best part of the dairy tours was seeing how vastly different each farm was while still being successful. Each farm was managed differently and had different areas of focus and growth, which made them each unique. I think this shows how limitless the dairy industry is and how there is room for everybody in dairy." Our members were so excited and look forward to touring more farms soon! We are so grateful to each of these farms for welcoming us to their facilities and thankful to have such wonderful people in our industry who are so passionate about what they do!

Camryn Farquhar is the vice-president of the University of Florida Dairy Science Club. She studies Agricultural Education and Communication.

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DAIRY SCIENCE CLUB

UF Dairy Science Club members enjoy their visits to dairy farms in Georgia and Florida

Making Better Dairy Heifer Calf Projections

Albert De Vries

How many dairy heifer calves do you plan to make this week? Many dairy farms struggle to answer this question. Yet the number of dairy heifer calves we make week in and week out, and subsequently raise, drive for a large part the future cow replacement rate. Calving heifers need a place in the barn. Cows are culled to make sure there is space. Cow culling is therefore dependent on how many dairy heifer calves we make and raise.

Good fertility and sexed semen allow us to make more dairy heifer calves than we need. Looking at heifer inventories from several dairy farms, we see that the number of dairy heifer calves made weekly can vary a lot. Some of this variation is due to reasons we cannot easily explain, such as fluctuations in fertility and apparent random chance. Like flipping a fair coin 100 times, we do not necessarily get 50 heads and 50 tails (in fact, the chance of 50 heads is only 8%)

The number of weekly inseminations with sexed and/or conventional dairy semen can also vary a great deal. Perhaps the policy is to use sexed semen twice in heifers, and twice in first lactation cows. Perhaps beef semen is used in other inseminations. If the number of heifers and cows that present them selves for insemination changes, so will the number of dairy heifer calves we can

expect.

For example, a period of heat stress can result in a temporary decrease in fertility which results in a greater pool of open heifers and cows later. If the insemination policy does not account for the number of open eligible animals we plan to inseminate, then we will propagate the variation in dairy heifer calves to be born and raised.

We can plan for the number of weekly inseminations to a large extend. Putting heifers and cows on an ovulation synchronization program, like Ovsynch, makes the number of inseminations quite predictable. The number of inseminations as a result from estrus detection is less predictable. This number varies due to fluctuations in fertility and apparent random chance.

How many inseminations we need to make the desired number of dairy heifer calves depends on the type of semen we use. Regular sexed semen results in approximately a 90% chance of a dairy heifer calf. Conventional semen has approximately a 50% chance of a dairy heifer calf.

Inseminations this week result in calving heifers about 33 months from now; 9 months of gestation and 24 months age at first calving. Planning for the right number of inseminations with sexed and/or conventional dairy semen this week requires that we calculate back in time from the number of calving heifers we want to have about 33 months from today. There will be losses on the way that we need to account for.

We'll use a numerical example to illustrate the planning including losses (see the screenshot). Say we have a 5,000-cow dairy herd. The stated desired annual cow replacement rate is 35%. This means that (rounded) we need 34 heifers calving every week.

The dairy is afraid that through unforeseen problems they may not have 34 heifers calving, so they build in a 5% safety margin. This increases the number of weekly heifers calving to 35. Note however, that this safety margin is expected to result in a 40% cow replacement rate now.

Not all heifer calves that are born alive will make it to calving. Some die, some do not get pregnant, some are sick or do no grow well and are culled. Non-completes vary from less than 10% to more than 20% of those born alive. Let's say 15% of heifers do not calve. These losses raise the number of dairy heifers born alive that we need to 42.

A dead-on-arrival risk of 3% increases the number of dairy heifer calves born dead or alive to 43.

Not every calf born from sexed or conventional semen is a dairy heifer calf. If we used sexed semen with a chance of 90% heifer calves, and no conventional dairy semen, then the number of dairy calves we need to be born to sexed semen (male and female) increases to 48.

Some heifers and cows that conceived to sexed semen will not produce a calf, for example due to death or being culled. If 15% of new pregnancies do not result in a calving, then this increases the number of new pregnancies diagnosed weekly to sexed semen to 56. This means that our goal is to have 56 pregnancies confirmed weekly in animals inseminated with sexed semen.

				inputs		results	results	results	2/4/2026	expected 1st calving date			
			Cow herd size	5,000		year	month	week	months from today				
			Cow annual replacement rate	35%	==>	1750	146	34	33	heifers calving to replace culled cows			
			Buffer (surplus heifers)	5%	1.05	1842	154	35	33	heifers actually calving			
			Non-complete heifers	15%	1.18	2167	181	42	9	heifer calves born alive			
			Dead on arrival, heifer calves	3%	1.03	2234	186	43	9	heifer calves born, including DOA			
			%females in sexed dairy semen	90%	1.11	2482	207	48	9	calves born to sexed semen (male and female)			
			New pregnancies not resulting in calving	15%	1.18	2921	243	56	1	new pregnancies diagnosed to sexed semen			
			Conception rate	49%	2.05	5998	500	115	0	sexed semen inseminations			
									5/8/2023	today			
					this week								
					inseminations			this week					
					(example)			new pregnancies					
				P/AI	sexed semen	this year	this month	made					
			Heifers	55%	55	2868	239	30					
			first lactation	45%	40	2086	174	18					
			second lactation	40%	15	782	65	6					
			older cows	35%	5	261	22	2					
				49%	115.0	5996	500	56.0	actual				
					115.0			56.0	goal				
					0.0			0.0	error				

Screenshot of a spreadsheet to make dairy heifer calf projections. The spreadsheet is available at https://shorturl.at/fNVW5

Finally, we need to determine which heifers and cows are inseminated with sexed semen (again assuming no conventional dairy semen is used). For example, assume we have the following conception rates: 55% in heifers, 45% in first lactation cows, 40% in second lactation cows, and 35% in older cows. If the number of sexed semen inseminations in each parity is as follows: 55 in heifers, 40 in first lactation cows, 15 in second lactation cows, and 5 in older cows, then we end up with 56 expected pregnancies (our goal), 115 inseminations, and a 49% average conception rate for these 115 sexed semen inseminations. All other inseminations that week might be to, say, beef semen.

Such analyses, calculating back from the required number of calving heifers almost 3 years from now, should help in determining how many dairy heifer calves you want to make this week. The expected losses should be reviewed frequently so the number of inseminations may stay as close as possible to what is needed to make the required number of dairy heifer calves.

We have not said anything about how to choose which heifers and cows you want dairy heifer calves out. Looking at their genetic merit, for example the PTA of Lifetime Net Merit dollars, is one way. Fertility is another factor. Age and breeding number may be reasonable guidelines. Choice of sires should also be considered. This is a topic for another day.

Which animals to cull when, and what the target annual cow replacement rate should be, are also topics for another day.

The figure is from a spreadsheet that can be down-loaded at https://shorturl.at/fNVW5. The ideas and spreadsheet were developed in collaboration with Ron Jackson, STgenetics. Comments, questions? Contact Albert De Vries at devries@ufl.edu

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