SELECTIONS

SUMMER 2025

TALENT AND TOOLS BRING DREAMS TO LIFE

David C. Thorbahn,
President and C.E.O., Select Sires Inc.

While we don't know what the future holds, in the words of Disney Imagineer Tom Fitzgerald, "If you can dream it, you can do it." Planning for the future requires some dreaming. Think big and set your goals for the next year, as well as five and 10 years. Be specific. Once you know where you're headed, Select Sires has the talent and tools to help you build your plan.

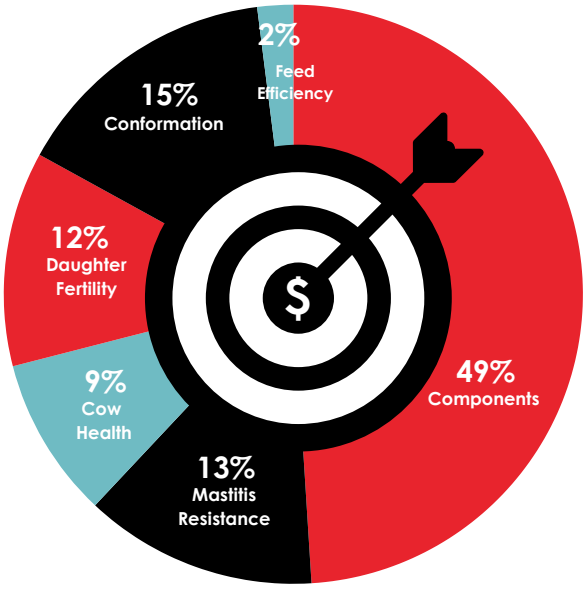
What we often don't realize is that we are making decisions today that will greatly affect the dairy in three years. Today's semen purchases and youngstock management will be evident when those animals calve and that heifer enters the milking string. Learn more about genetic and management strategies to improve calf health and milking cow profitability from Ethan Haywood and Lyle Kruse on page 4.

Once you've established your goals, work with Select Sires to determine your roadmap. The beef on dairy boom has impacted heifer inventories, but Select Sires has the tools and expertise to help protect your replacements while also taking advantage of the value-added beef on dairy market. Select Sires consultants leverage intuitive inventory calculators and consider herd data, non-completion rates, fertility records and more to deliver a detailed plan to use sexed semen, conventional semen and/or beef semen in your mating program.

With goals in place and a plan on the dashboard, the only other things to consider are opportunities and challenges. Your Select Sires trusted advisor can analyze trends, future market outlooks and identify ways to economically and efficiently incorporate these concepts into the operation. A recent example includes the beef on dairy market, and opportunities to capitalize on sustainability initiatives are not far away. Learn more about the potential in the sustainability space from Joanne Knapp, Ph.D. on page 14.

We will undoubtedly face challenges as we navigate any business, but our first line of defense against the unknown is an innate ability to pivot. Knowing our dairies inside and out is critical, including financial data, cow health and fertility metrics, production data, genetic strategy and more. Team meetings with farm employees and on-farm consultants ensure that everyone understands the dairy's goals, strengths and weaknesses and prepares the collective team to pivot and hold on to profitability when a challenge presents itself. Guest writer, Katie Burgess from Ever.Ag, has an engaging piece about milk markets and how to best prepare your herd for the ebbs and flows on page 6. And as the summer heat influences conception, we are reminded that daughter fertility can make or break reproductive success. Maier Farms LLC in Wisconsin has made fertility a focus in recent years, with emphasis on both sire selection and management. Check out page 8 to gain insights into their strategy.

This edition of Selections is packed with resources to help your herd plan for the future. Reach out to your local Select Sires representative today to create a custom plan for your herd! ◆



Holstein
Herd Health Profit Dollars®

WHAT MAKES HHP$® DIFFERENT THAN OTHER POPULAR INDEXES?

PROTEIN

Keeping protein part of CFP.
Current economics say the more fat the better, but history tells us this can quickly reverse course.

UDDER HEALTH

Staying focused on udder health.
Mastitis resistance is HHP$'s calling card.

DAUGHTER FERTILITY

Can't afford a fertility backslide.
As we strive for increased production and components, we can't sacrifice fertility. Other industry indexes are leading to drops in fertility.

LONGEVITY

New attention to Livability.
We've shifted emphasis away from Productive Life and towards Livability.

THE INFILTRATION OF THE DOMINANT POLLED GENE IS AS EASY AS 1-2-3

Larry Schirm, Global Dairy Solutions Advisor, Select Sires Inc.

Step 1: Select homozygous Polled (PP) sires to create your next generation. 100% of these replacements will be phenotypically Polled, and carry the gene in their genetic profile, along with a remaining horned gene from their mothers.

Step 2: Repeat step 1. Continue the phenotypic Polled expression by mating first generation offspring to homozygous Polled sires and 75% of replacements will be homozygous for the Polled gene.

Step 3: Now you have some options. Option A is a repeat of Steps 1 and 2. Option B is to repeat Steps 1 and 2, but only on the 75% of the female population that is homozygous Polled, resulting in a replacement population that is 100% Polled both genetically and phenotypically. (If you choose option A in step 3, then 87.5% of the third generation is homozygous Polled and you could then utilize option B in the fourth replacement generation on the 87.5% homozygous Polled herd of replacements to have a complete herd of 100% Polled replacements).

Why would a dairy producer want homozygous Polled replacements?

- ☆ Calf wellness
- ☆ Optimization of lifetime genetic potential
- ☆ Marketing opportunities and public perception

In a time when every replacement counts, maximizing lifetime potential has a new meaning and much greater value in both the short- and long-term profitability of the dairy. Maximizing lifetime potential begins in our calf rearing and calf wellness programs. Genetics and environment each play a critical role in developing healthy and thriving calves.

Farm records and genetic audits show that leveraging calf wellness traits such as Zoetis' Calf Respiratory Disease, Calf Scours and Calf Livability, as well as the Calf Wellness Index™ (CW$™) has substantial value.

Housing, nutrition and protocols combine to represent the environment and providing the right environment for genetics to express themselves is paramount. Dehorning has always been accompanied by risk, time and cost, both direct and indirect.

The average cost of disbudding ranges from $12 to $13.[1] Labor and employee training are additional costs. Polled genetics reduce the number of tasks on your to-do list and cuts additional costs.

What I find most interesting is that if Polled is dominant, and not damaging to the expression of other genes, why do we avoid it? Most often, I think folks make the claim, "the Polled bulls aren't high enough," but that isn't the case today.

45 POLLED HOLSTEIN SIRES

with an average of

+564 HHP$	+576 MILK
+549 DWP$®	+88 CFP
+12 CW$	2.89 SCS
+3079 GTPI®	+1.3 MAST

24 POLLED JERSEY SIRES

with an average of

+396 HHP$	+314 MILK
+531 DWP$	+47 CFP
+31 CW$	2.85 SCS
+134 GJPI™	108 Z MAST

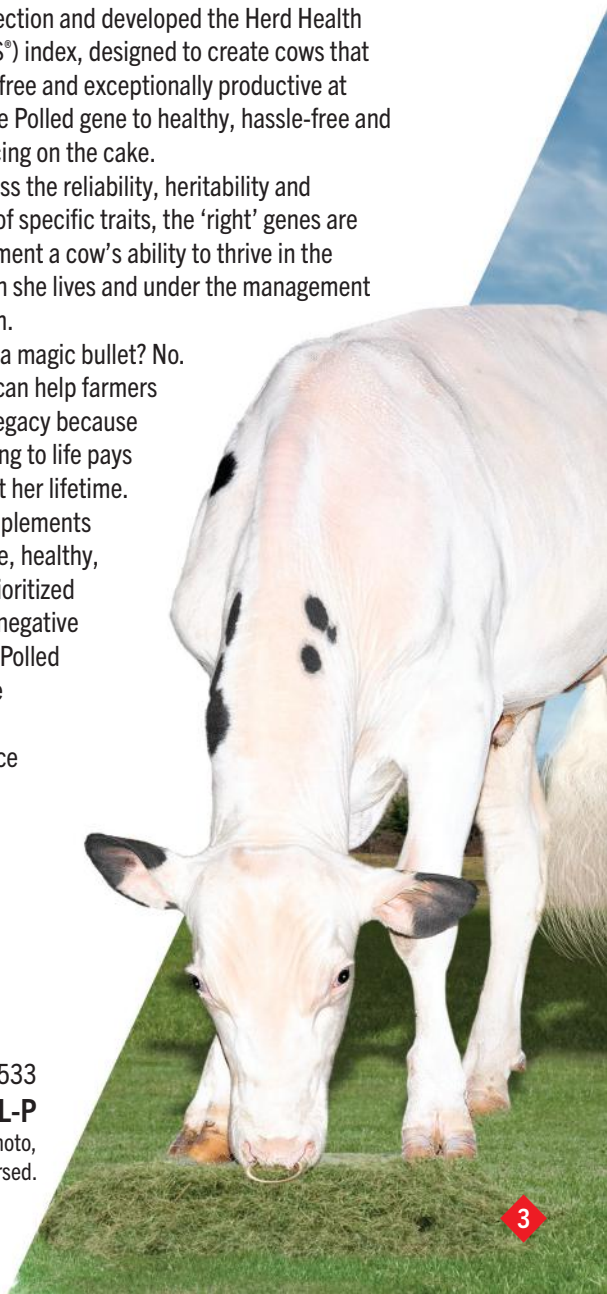
Polled genetics can help 'Make Longevity Her Legacy'

The average productive life of dairy cows in the U.S. is less than three lactations but research shows that cows reach their greatest productive potential in the third and fourth lactation. Select Sires realized the general genetic focus was in the wrong direction and developed the Herd Health Profit Dollars® (HHP$®) index, designed to create cows that stay healthy, hassle-free and exceptionally productive at every age. Adding the Polled gene to healthy, hassle-free and productive cows is icing on the cake.

While we can assess the reliability, heritability and general profitability of specific traits, the 'right' genes are those which complement a cow's ability to thrive in the environment in which she lives and under the management strategies of the farm.

Is the Polled gene a magic bullet? No. But the Polled gene can help farmers make longevity her legacy because a stress-free beginning to life pays dividends throughout her lifetime. The Polled gene complements the high performance, healthy, hassle-free genes prioritized in HHP$ and has no negative corollary genes. The Polled gene has no negative side effects, and it is growing in acceptance by both processors and consumers. In fact, the infiltration of the dominant Polled gene is as easy as 1-2-3. ◆

[1]Thompson et al., 2017



14HO17533
AZUL-P
Thomas photo, reversed.

ARE WE SOUNDING THE RIGHT HEIFER ALARMS?

Ethan Haywood, Genetic Specialist, Select Sires Inc.
Lyle Kruse, Retired Vice President of U.S. Market Development, Select Sires Inc.

As we visit U.S. farms and talk with dairy producers, one question seems to always work its way into the conversation: What are you getting for a beef on dairy calf this week? It is an exciting development in today's dairy industry, and one that will not be quick to fade. Values of $1,000 or more for a day-old beef on dairy cross calf will be very beneficial when we evaluate our 2025 balance sheets and keep dairy farmers confident as milk futures waver at less attractive levels. However, the topic of beef on dairy might distract us from asking two critical questions that will have an impact on profitability in 2028.

1. **Do you have enough heifer calves to sustain your herd?**

2. **Are your heifer calves healthy and thriving?**

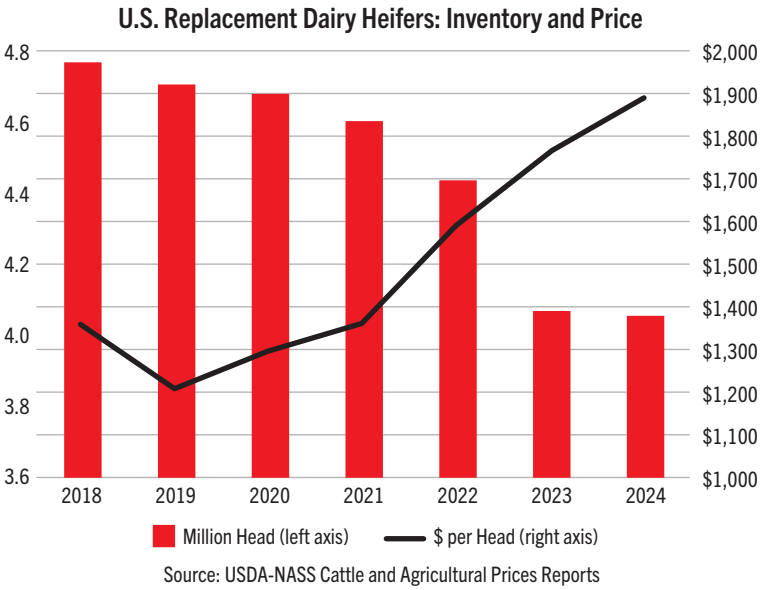
The link between cull rate and heifer inventory

The USDA estimates that the dairy heifer inventory is at a 22-year low, with enough replacements to support a national cull rate of 26%. Meanwhile, cull rates on U.S. dairies still average over 30%. We do know that more cows are being kept longer to try and keep stalls full, but that means profit potential will hinge on health, fertility and efficiency of those older cows. National Association of Animal Breeders (NAAB) reports that 2024 semen sale trends indicate that the heifer shortage is being felt by some, with a 4% increase in domestic dairy semen sales, however the growth is not enough to make up for the decreases in the previous four years. Many farms are strategically breeding to make 95-100% of their heifer needs in order to capitalize on beef on dairy calf markets, but do those needs cover the number of high-quality heifers that are needed in the fresh cow pen two and a half years later?

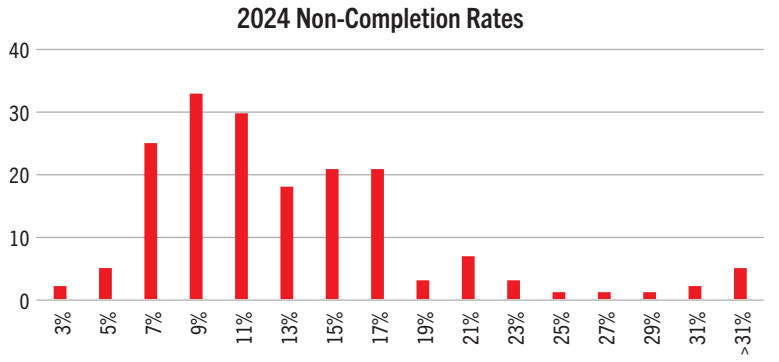
Do you know your dairy's non-completion rate?

Dairy heifer non-completion rate (HNCR) is defined as the percentage of heifers born alive that leave the herd before their first calving. The current Dairy Calf and Heifer Association (DCHA) Gold Standards for HNCR is 10% or less. When analyzing heifer completion rates, we see a large variability across farms, climates and management systems. In a data set evaluating HNCR in the U.S. we found a wide range. Herds within the data set ranged from 80 to 35,000 cows and included 200 herds in Arizona, California, Idaho, Indiana, Michigan, Minnesota, North Dakota, Nevada, Ohio, Texas, and Wisconsin. Non-completion rates ranged from 3% to 33%, and loss of heifers before six months ranged from 1% to 25% within the analyzed herds. Differences in completion rates were not seen between Holstein, Jersey and crossbred herds.

When digging into "when" these potential replacement heifers were exiting dairy herds, three key areas of loss were identified: the first 48 hours, weaning and the breeding pen.



Source: USDA-NASS Cattle and Agricultural Prices Reports



The critical first 48

The first 48 hours of life is the first spike we see in heifer loss. Ensuring that maternity protocols, calving environment, colostrum intake and calf welfare are all top priorities on the dairy can have a substantial effect on the flow of available replacement heifers. These small details not only minimize the loss of heifers from day-one, but also dictate the health, growth and wellness of the heifer population later on in the pipeline.

Diet and environmental changes

The second spike in loss that we see on most dairy farms is at the weaning stage. This is one of the most stressful and critical phases in a heifer's life. They are transitioning off milk while also likely experiencing a change in environment. Many are entering group housing for the first time, trying to ensure adequate intake of new feeds and receiving less one-on-one time than they were experiencing as young calves. These changes can occur on farm and with heifer raisers alike, and may lead to less thrifty animals falling through the cracks.

Fertility is key

The third area of increased non-completion occurs in the breeding pen as we begin to evaluate heifers as individuals again, making breeding decisions and either synchronizing or watching for heats. These heifers get significantly more individual evaluation and we begin to identify animals that are not as well grown as the rest of the group. This phase serves as a report card of the heifer's life over the past year and begins to bring the genetic fertility of the animal to light.

We see clear stratification even in the best heifer raising systems between heifers with better genetics for fertility, specifically Heifer Conception Rate (HCR) and Cow Conception Rate (CCR), and inevitably have to cull some animals who are not in good enough health to become pregnant or unable to do so in the desired window.

The important role of elite genetics

While management is paramount, the role of genetics is also quite evident in heifer populations. As inventories become leaner, focus on calf health and fertility traits is becoming more important to try and get as many heifers to complete the cycle as possible. Heifers with better values for Calf Wellness Index™ (CW$™), Calf Respiratory Disease, Calf Scours and Calf Livability lead to less treatments and better yields in first lactation animals.

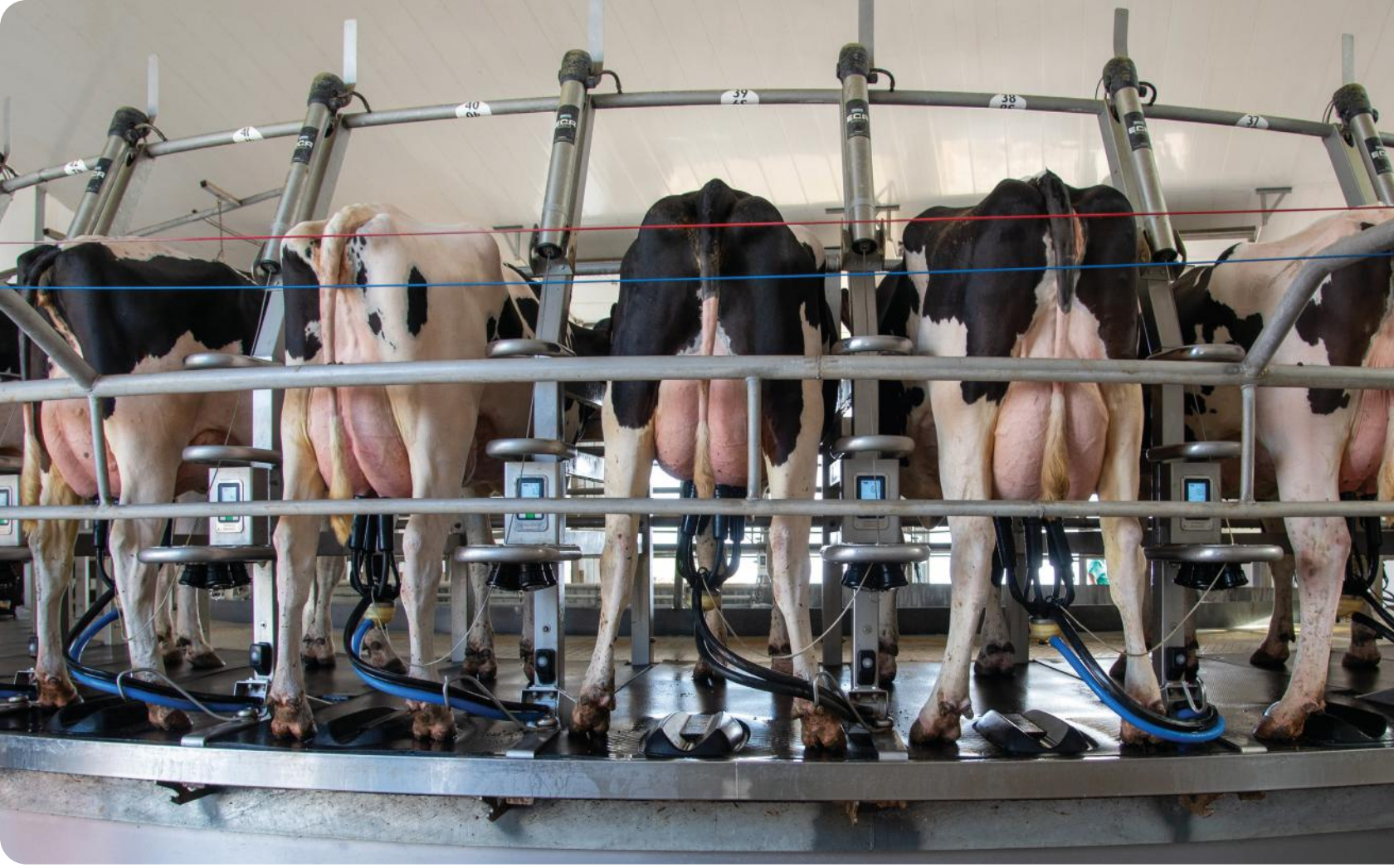
As our industry enters a phase where it becomes a necessity to "milk what you make," we encourage increased investment and focus in both the management and genetics of the dairy's calves, which are the future dairy herd. Our consulting teams continue to work diligently to craft customized genetic plans and management systems to ensure the future of our dairy partners. ◆

TAKE HOME POINTS

- Use your genetic advisor to strategically determine the right number of replacements and ensure that they are sourced from the right females. Your advisor will also account for heifer non-completion rates.
- Heifers who make it to the fresh pen, but face health challenges in the growing period will be less profitable animals.
- Focus on key youngstock milestones: birth, weaning and breeding stages.
- Investments in calf health products and monitoring systems become more profitable as heifer inventories shrink.
- Use a combination of management and genetics to set your dairy up for future success.

These three milestones are critical points in time to focus on regarding the management of heifer health. These periods of growth and development also provide an opportunity to see a large return on investment into animal health products.

BIRTH: **First Day Formula**® *research-supported colostrum replacer or supplement*
WEANING: **AccelAIRate** *a nutraceutical product formulated to help support the respiratory system*
BREEDING: **Tri-Mic 1:50** *formulated to drive feed intake, enhance feed utilization and growth rates*
Tri-Start *formulated to benefit both the rumen and intestinal tract*



UNDERSTANDING THE SURGE IN SOLIDS OVER TWO DECADES

Katie Burgess, Dairy Market Advising Director, Ever.Ag

Milk is milk, right? Sure, to the untrained eye, the milk coming from the cow and heading into the bulk tank might look the same as it did a generation ago. But the reality is, milk today has a whole lot more potential than it used to.

The leading driver is soaring butterfat levels. In 2024, the average U.S. fat test was 4.24%, up from 3.74% in 2014 and 3.68% in 2004, according to USDA. Not only did butterfat levels reach a new all-time high last year, but the pace of gain has risen, too. Consider this: between 2004 and 2014, the compound annual growth rate was just 0.2%. From 2014 to 2024, the growth rate increased to 1.2%. And, during 2024, the fat level increased by 2.2%!

The same is true, but to a lesser extent, on the protein side. In 2024, milk protein averaged 3.30%, up from 3.12% in 2014 and 3.04% in 2004, according to Federal Milk Marketing Order data. And, during three of the past four years, protein content has increased by more than 1% annually. That was never true during the preceding 20 years.

Putting that all together – milk has 15% more butterfat and 8% more protein than it did in 2004. Pretty impressive!

What accounts for the change?

Clearly, there has been more focus on component levels, both from a breeding and nutrition perspective. Also, with some processors setting volume restrictions, increasing components has been a way to improve milk value while still shipping the same number of pounds.

Plus, genomic testing makes it possible to grow component levels at an accelerated pace. As dairy producers selectively advance the best genetics in their herd, that means the potential for each new generation of heifers is increasing at a faster rate than ever before.

Growing components offers other benefits too. Milk frequently gets hauled a long way, so it makes financial sense to be moving more components and less water. Especially as hauling costs are typically allocated on a per hundredweight basis.

Compared to 20 years ago, on average, each tanker of milk now has 12% more of the valuable fat and protein components and carries 1% less water and other solids. And, from that tanker of milk, that's enough extra components to boost product yields by 13% if making cheddar cheese or 15% if churning butter.

The increase in component levels corresponds to changing dairy consumer trends. Twenty years ago, nearly one third of U.S. milk was consumed as fluid milk – so there was value in the water. In 2024, that amount was below 20%. Today consumers eat more dairy in the form of higher-density products like cheese, butter or yogurt. Plus, with a handful of new or expanded cheese plants opening over the past two years, there is continued demand for both protein and fat as processors continue to grow cheese production.

But, growing component levels – and particularly as the increase in fat levels is outpacing the growth in protein levels – has created some challenges on the processing side. Today, many cheese plants start the make process by separating out some of the fat – allowing them to achieve the proper balance of fat:protein to make cheese. And, then they typically sell the extra cream.

Another important demand center for increasing milk solids levels is the international market, as exports now account for more than 15% of U.S. output. The two main export products - cheese and nonfat dry milk - are both items with minimal water. Here in 2025, cheese exports are on a record pace through May, with strong sales volumes to Mexico, South Korea and Japan. And, with export volumes generally expected to grow in the years ahead, continued focus on milk solids production just makes sense.

What does this mean for the dairy industry?

This shift means focusing on milk solids production rather than just fluid volume. For instance, in 2024, average daily U.S. milk production decreased by 0.5%, but on a milk solids level, output increased by 1.2%. That's why even in a period with declining milk flows, there still can be increases in dairy product output.

And for producers, it's important to make sure your herd is living up to its full potential. Genetic advances have made it easier than ever to grow component values, allowing you to capture more value for each hundredweight of milk produced.

Where do we go from here?

Milk from water buffalo can reach more than 11% butterfat. So, it seems like there is still some room to run. Who knows, perhaps 20 years in the future, we'll look back and see that now is only the beginning of us starting to explore the genetic potential of dairy cows. ◆

Q&A

WITH DAIRY MARKET ADVISING DIRECTOR KATIE BURGESS

Q: What drives the price for milk fat? Does cheese production influence the value of milk fat?

A: From a technical perspective, the price of milk fat is solely determined by the price of butter. Of course, cheese has fat in it, but the federal order formulas are set as such that the price of butterfat is held constant whether it is in butter or cheese. Then the price of protein is forced to adjust. By knowing the price of cheese and butterfat, that's how you back out the protein value.

Q: Are there any challenges to consider with the growing component levels?

A: Yes! The relative imbalance between growth in fat versus protein. In some cases, we've seen producers get penalized if their ratios are too far skewed toward fat. The right balance of protein and fat is necessary to properly make cheese. Plus, it doesn't do any good to make all that fat if processors aren't going to pay for it.

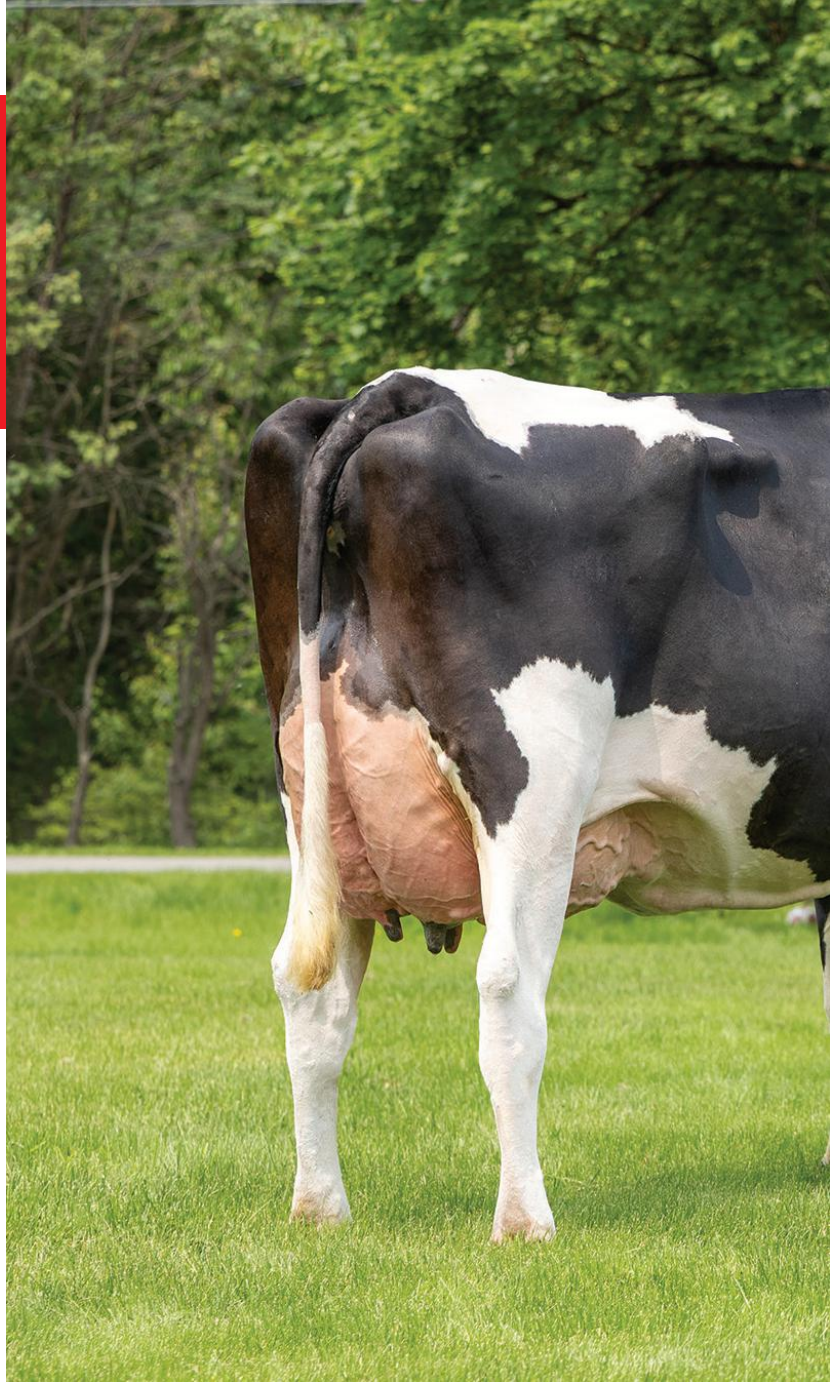
Q: With U.S. dairy consumer trends and the export markets in mind, how should farmers react and what steps should they take to make sure they are preparing for the long-term and not a short-term financial gain?

A: From my perspective, the biggest benefit of increasing component levels is that you can generate increased revenue on the same fluid volume of milk, thereby increasing your returns relative to your fixed costs.

MATERNAL MAVENS

COW FAMILIES FOR MODERN GENETICS

Impact sires begin with successful dams. The Endco Yoder L7933 9839-ET and Aurora Parfect 23719-ET cow families were developed with modern, progressive genetics in mind. Sires sourced from these families are making their stamp on the Holstein breed.



Endco Yoder L7933 9839-ET

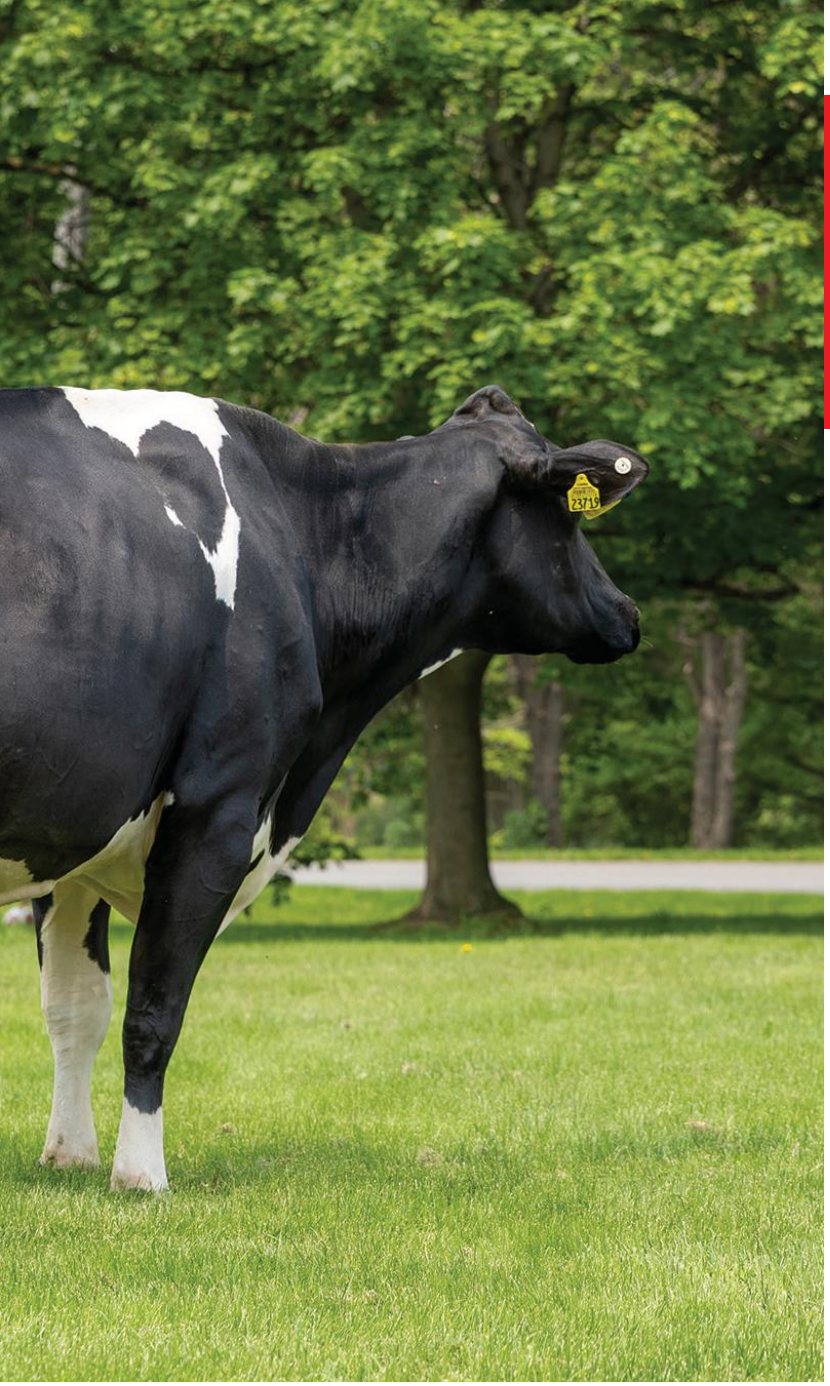
The story behind Endco Yoder L7933 9839-ET (VG-86-VG-MS) is somewhat unique. Her dam, T-Spruce Lgold 7933-ET (GP-81), was bred by Arnie Gruenes of Twin Spruce Farm, Richmond, Minnesota but later sold. In 2017, Gruenes had the opportunity to reinvest in the family when 9839 was consigned to the World Classic sale. "I just had a feeling about 9839," said Gruenes. "She had several attributes that were appealing to me, and I thought, I just need to buy that cow. My gut told me she could do well in our herd, so I put my hand in the air."

And do well she did. Managed in a freestall environment, 9839 was a modern, mobile cow with exceptional feet and legs and a quality mammary system, making a best record of 5-05 3x 350d 34,320M 4.5% 1,560F 3.7% 1,255P. "She lived the entirety of her life in a real-world environment and thrived as a cow that went to work and did her job every day," notes Kevin Jorgensen, senior Holstein sire analyst. "She was the same ideal commercial cow every single time we saw her."

An exceptional cow in her own right, 9839's legacy is cemented by her prolific offspring, most notably her son, 7HO14250 LEGACY and grandson 7HO15167 GAMEDAY. Sixty LEGACY sons have been sampled at Select Sires, as well as 133 sires out of LEGACY dams. There have been 71 GAMEDAY sons sampled, 123 sires sampled from GAMEDAY dams, and a remarkable 257 sires from GAMEDAY granddaughters. "I have immense faith in this cow family," says Jorgensen. "LEGACY was a great sire, but GAMEDAY is a generational sire."

With multiple generations in the herd at Twin Spruce, 9839's impact continues. Of her daughters, Mercedes Lionel Lass-ET is arguably the most impactful. A 7HO14454 LIONEL daughter, she has five sons at Select Sires, including 7HO16468 PHOENIX. She also has an impressive 13 grandsons, including 250HO17108 ESKIL and 14HO17116 BATU.

"It's humbling to see the type of success this cow family has had in the A.I. industry," says Gruenes. "We have a type of cow that we like and strive to breed for, but to see others having success with our genetics is very rewarding. When we can make an impact, breeding more profitable cows and influential sires for our dairy and the industry, it's a good feeling."



Photos L-R: Endco Yoder L7933 9839-ET (VG-86-VG-MS); Aurora Parfect 23719-ET, (VG-88-EX-MS-DOM) Swale photo; Arnie and Kris Gruenes are the breeders of the world renowned proven sire 7HO14454 LIONEL. Pictured with LIONEL below are Dave Thorbahn, president and CEO of Select Sires, Chuck Sattler, vice president of genetic programs, Arnie and Kris Gruenes, Kevin Jorgensen, senior Holstein sire analyst, Todd Kranz, chief development officer and Jeff Ziegler, vice president dairy cattle breeding.

"When I have a cow that fits my breeding philosophy and hits the targets I'm looking for in productive cattle, I capitalize on those genetics," says Gruenes. "We have an aggressive IVF program and utilize the most current and profitable genetics to create the kind of cows we like to work with. In the case of 9839, when you get a cow family that works, you stick with it."

Aurora Parfect 23719-ET

One of the more impactful cows in modern genetics, Aurora Parfect 23719-ET (VG-88-EX-MS-DOM), almost never was. A 7HO15085 PARFECT daughter that traces back to Aurora Doorsopen 17054-ET (EX-93-EX-MS-2E-DOM), 23719 was injured as a young calf. After a trip to the Cornell University Veterinary Hospital, Dave Harvatine, owner of Aurora Ridge Dairy, Aurora, New York was advised to euthanize the calf. "She was a high genomic heifer who showed a lot of promise. I told them putting her down just wasn't an option, so let's figure something out."

With treatment and care, 23719 beat the odds and was able to return to the farm, where she didn't just live, she flourished. "She's one heck of a cow," says Harvatine. "They told me she would just be a donor dam and never calve in, but she's living in the freestalls and is an exceptionally productive cow."

The hardiness and longevity of the 23719 cow family is on full display at Aurora Ridge Dairy. With the recent freshening of several new two-year-olds, there are now five generations in the milking herd, and seven generations on the farm in total. "The string of generations milking simultaneously reflects the breeding prowess of this family," notes Rick VerBeek, senior Holstein analyst. "The terms and phrases one can use to describe this family seemingly never end: dairy strength, width of muzzle, length of neck, deep and open rib, massive rear udders, tough as nails, trouble-free, and most importantly, profitable!"

23719 has six sons at Select Sires, including 7HO17648 BLACKROCK and 7HO17010 HONOCO. There are currently 30 sons in total from the family standing at Select Sires. "23719 is everything you could want in a modern cow," says Harvatine. "She is moderate-sized, has so much width, a beautiful udder, high components, makes a lot of milk, and is a dang good cow to look at too. Most importantly to me, she transmits, and that's why we have tried to incorporate as much of the family back into the herd as we can. We have confidence in the sires we've put into stud and we utilize them back on our own cows."

"I'm proud of how our genetics have evolved," shares Harvatine. "It's easy to mate a high genomic heifer to the highest genomic sire and hope for the best, but you have to make sure those two animals are complementary. Cow families play a significant role, and I'm more apt to use a bull from a strong, reliable cow family than one I don't know or have confidence in." ◆

INBREEDING: HIGH-RISK VS. LOW-RISK

Mehdi Sargolzaei, Ph.D., Director of Genetic Research, Select Sires Inc.

In the Spring edition of *Selections*, we discussed the main concepts surrounding inbreeding and how it is measured. In this article, we dive into how we interpret inbreeding at the individual animal and herd levels. Some key considerations to manage herd inbreeding will also be discussed.

Genomic data has enabled us to extract more information about inbreeding. For example, with genomics we can now identify Runs of Homozygosity (ROH) and differentiate between high- and low-risk inbreeding more accurately. ROH are long chromosomal segments where a progeny has inherited the same DNA sequence from the sire and the dam.

What are high- and low-risk inbreeding?

High-risk inbreeding refers to the type of inbreeding that has higher likelihood of carrying deleterious recessive alleles (mutations). Inbreeding arising from recent common ancestors is usually considered high-risk, and low-risk inbreeding is ancient inbreeding arising from distant common ancestors.

Short ROH segments are associated with ancient inbreeding. It usually indicates the chromosome has experienced multiple crossover events over multiple generations and there has been ample opportunity for purging of deleterious alleles. These short ROH segments are considered low-risk because they have survived many rounds of selection and continue to show up in high performing animals. Alternatively, long ROH segments have not been split apart by crossover events because they likely haven't existed for multiple generations. These long ROH segments are associated with recent inbreeding. They are considered high-risk because deleterious recessive alleles haven't been exposed and selected against so are more likely to be hiding in these segments.

Low-risk inbreeding is usually stretched over shorter ROH segments (i.e. ancient inbreeding) while the high-risk inbreeding is stretched over longer ROH segments (i.e. recent inbreeding).

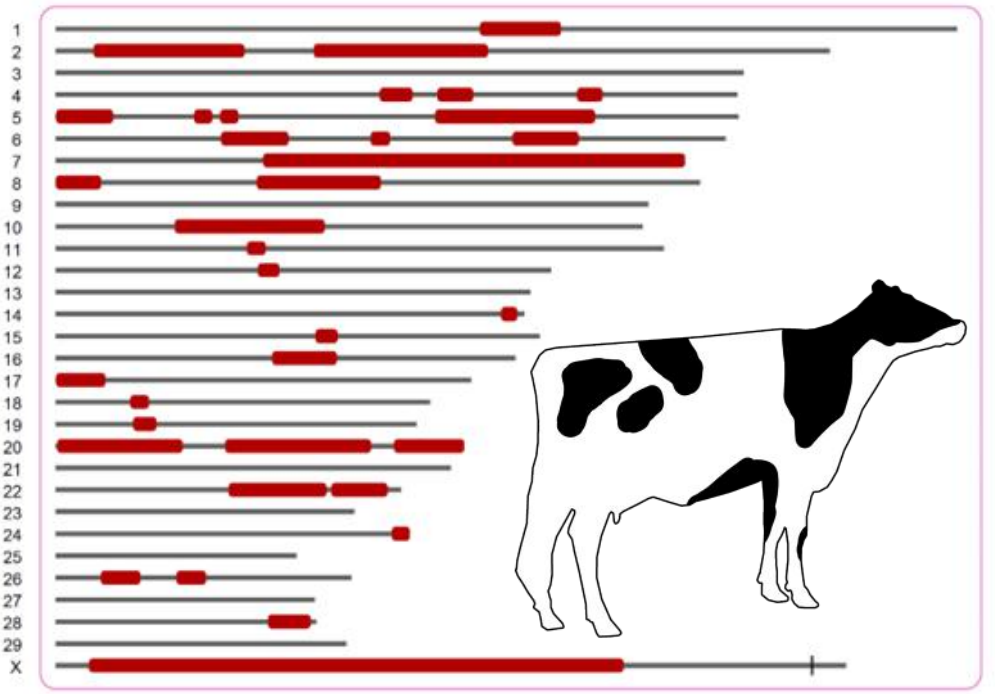
To understand this concept better let's consider ROH-based inbreeding profiles of two cows with the same inbreeding level. Reference the ROH reports on page 11 as examples.

Inbreeding of cow A and cow B is 20%. Cow A, on average, has longer ROH segments and therefore carries more recent inbreeding which is considered to be higher risk. But cow B has many shorter ROH segments and therefore a good portion of its inbreeding is most likely low-risk inbreeding.

If, for cows A and B, the short homozygote segments are removed, then cow A would have higher inbreeding than cow B. So, it is essential to consider ROH profile when interpreting the inbreeding.

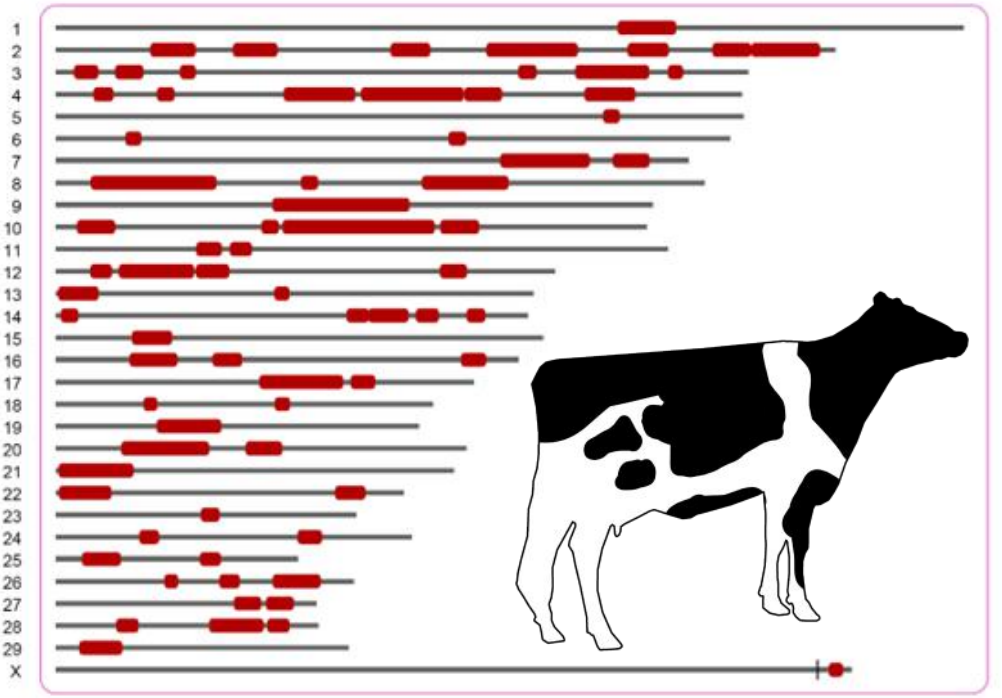
COW A Inbreeding Level: 20%

✖ Longer inbred segments ➜ More Recent Inbreeding ➜ Higher Risk



COW B Inbreeding Level: 20%

✔ Shorter inbred segments ➜ Most likely low-risk



How can inbreeding information be used in mating decisions?

In mating recommendations, our objective is to control relationships between parents. Note that inbreeding of the sire and the dam is not as important as the relationship between them. This is because progeny inbreeding is determined by the relationship between parents. Half of the relationship between the sire and the dam is inbreeding of the progeny.

The relationship can be categorized into low- and high-risk relationships like ROH-based inbreeding. That means parents with longer shared chromosomal segments (originated from recent common ancestors) are more likely to produce progeny with longer ROH which carries higher risk inbreeding. Therefore, by putting more weight on avoiding high-risk relationships in the mating program we can penalize less for low-risk inbreeding.

In herds that don't leverage genomic testing, sire rotation can be an effective strategy if applied correctly. Use of different sires each year reduces the probability of having recent common ancestors in the pedigree and therefore reduces high-risk inbreeding.

Select Sires uses a two-tier approach to control inbreeding in herds and in the population. The main and critical tier is to develop a diverse lineup of sires. Select Sires is well known for its sire diversity and elite genetics, which is achieved by striking the right balance between selection pressure and diversity. The second tier is the algorithm used for determining mating recommendations. Select Sires uses well-designed tools including Select Mating Service® (SMS®), and World Wide Mating Service (WMS) in international markets, to manage herds' profitability and inbreeding. These tools use genomic/traditional PTAs to maximize the genetic level of herds according to their customized goals. At the same time, these tools emphasize sire diversification, avoiding closely related parents with high-risk relationships and prevent mating of parents with known genetic conditions such as cholesterol deficiency, muscle weakness and more.

TAKE HOME MESSAGE ➜ One misconception within mating decisions stems from a need to avoid using inbred parents. Even though inbreeding of an individual parent has an impact on the fitness of that parent, the key measure to consider in mating decisions is actually the relationship between the two candidate parents. The best strategy to manage inbreeding at the herd level is to use a diverse group of sires along with a mating program, preferably genomic mating that avoids recent or high-risk relationships, while maximizing genetic progress. ◆

DAUGHTER FERTILITY DELIVERS FINANCIAL STABILITY

INSIGHTS ON FACTORS INFLUENCING FERTILITY AND HOW THE TEAM AT MAIER FARMS DRIVES PROFITABILITY

"We focus on longevity and making a healthy, profitable cow," says Patrick Maier, partner at Maier Farms, LLC. Located a short distance north of Wisconsin's capitol, Maier Farms is a multigeneration operation with a keen focus on reproductive success and the role it plays in the productive life of their cows. While selecting high fertility sires can enhance conception rates, it's a short-term fix. Instead, Maier Farms focuses on the long-term, generational value of elite daughter fertility. Daughter fertility is two-pronged: there is a significant genetic component but without the right management and environment those genetics can't be expressed. Here's how Maier Farms achieved a 42% pregnancy rate, 77% submission rate and 57% first-service conception rate with patience, resilience and intentionality.

Sire selection

Fertility potential begins long before the breeding pen, in fact, it begins before the ovum is fertilized when service sires are being selected. Referencing Daughter Pregnancy Rate, Cow Conception Rate, Heifer Conception Rate and Fertility Index values when selecting sires is critical for building a solid foundation genetically. Maier Farms Herd Manager Max Shenkenberg says, "We were early adopters of NxGEN® and as the lineup continues to expand, it provides us with lots of options. Our milk is shipped for cheese production and components are extremely important." Shenkenberg explains that while components receive high priority in their sire selection criteria, DPR is currently used as a tie breaker. Along with components and fertility, health traits continue to hold space as Shenkenberg says, "We need lots of lactations out of our girls to pay for their investment."

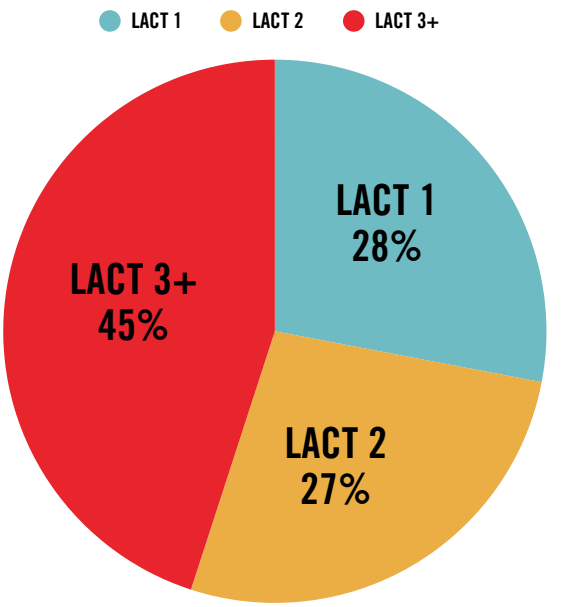
The herd has a 32% cull rate with low production being the main reason for culling. "We primarily cull cows for low production. These are typically animals that receive a DNB notation or are short bred and dip below a profitable amount of production. Our next reasons for culling would be sick/injury, mainly slips and falls, swollen hocks or a prognosis that doesn't look good. Our third reason for culling is mastitis. We are using less antibiotics and preventatives for dry cow treatments and are less forgiving on chronic animals."

It begins at birth

Once a foundation of elite genetics has been established, Maier Farms begins to build their heifers up for a profitable future. Healthy and thriving calves mature into fertile heifers and profitable cows. The Maier team recognizes this and prioritizes exceptional calf care from the second a heifer hits the ground.

They will be the first to admit that their maternity pen and calf care protocols aren't unique or special, but they strive for consistent protocols, records and communication among team members. Maier says, "There's no silver bullet. It's about consistency."

Herd Makeup Summarized by Lactation



Their consistency is evident with an extremely low non-completion rate of 5.54%. "We don't have many heifers not make it to the milking herd, and that's a testament to creating healthy, fertile animals. Excellent comfort and having proper ventilation are critical so that once they are checked pregnant, they stay pregnant," said Shenkenberg.

Keeping protocols a priority

Maier's views on consistency are applicable to breeding-aged protocols as well. "The best thing we can do with heifers to achieve high-pregnancy rates is to have a high-service rate," says Shenkenberg. "We need to get them to show heats and get semen in them. Consistent heat detection is critical – doing it at the same time every day. We have an aggressive approach, and it works."

Maier Farms Reproductive Program Overview

DAY 423

Prostaglandin is administered to every eligible heifer with intentions to breed by 14 months of age.

DAYS 32-46

Pregnancy check with ultrasound and recheck at 70-84 days.

Open heifers with a CL receive prostaglandin with the remaining heifers enrolled in a CIDR-synch program.

While they maintain a low non-completion rate, they do however cull heifers that pass the four-service threshold or abort in the pregnant pen as they have identified these heifers as more of a risk than an asset to their herd's profitability.

Skills and patience

A program is only as good as its people – training and compliance are critical. Shenkenberg and Maier attribute the herd's reproductive success to their fellow team members. Maier emphasizes training around reproductive success, including heat detection, hormone compliance and artificial insemination. Shenkenberg shared that A.I. training can be challenging because you don't know your accuracy until that cow is pregnancy checked at 32 days. He encourages team members often by saying, "Be patient, resilient and intentional and the results will follow."

"The herd's 77% submission rate is a testament to their training and compliance programs," says Susie Martin, genetic consultant, CentralStar Cooperative. "Submission rate is the percentage of eligible cows bred within a specific timeframe. A high submission rate is crucial for achieving good reproductive performance. The team at Maier is breeding cows in a timely manner and therefore maximizing their chances of creating pregnancies."

Tailormade consultation

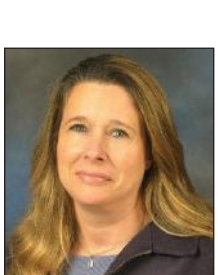
In addition to genetics, Maier Farms leverages the tools and consultation services provided by their local Select Sires member cooperative, CentralStar Cooperative. While profitability through longevity is their ultimate goal, there is a laundry list of things that need to fall into place to achieve that goal, some of which include creating the right number of heifers from the right cows for replacements. Martin uses Select Sires' intuitive inventory calculator, Optimal Genetic Pathways, to determine usage of sexed NxGEN and conventional beef semen, as well as the appropriate number of services.

The herd went through an expansion a few years ago. The strategy included growth from within and also purchased cows. This expansion led to slugs of calvings that put pressure on their heifer pens and management. Martin helped tighten and fine-tune the strategy to allow for more consistency.

Martin continues to run routine reports and share with the management team. "You have to be proactive and not reactive when it comes to reproduction. The results are down the road, they are not instantaneous, but having reports from Susie in our inboxes is a critical part of the decision-making process," says Maier. ◆

DUAL-PURPOSE DAMS

UNCOVERING THE UNTAPPED VALUE OF BEEF ON DAIRY CALVES



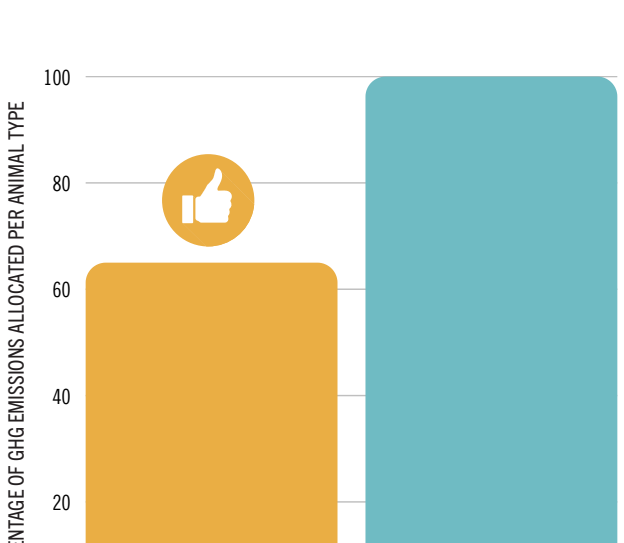
Joanne Knapp, Ph.D. PAS, Chief Scientific Officer, Low Carbon Technologies

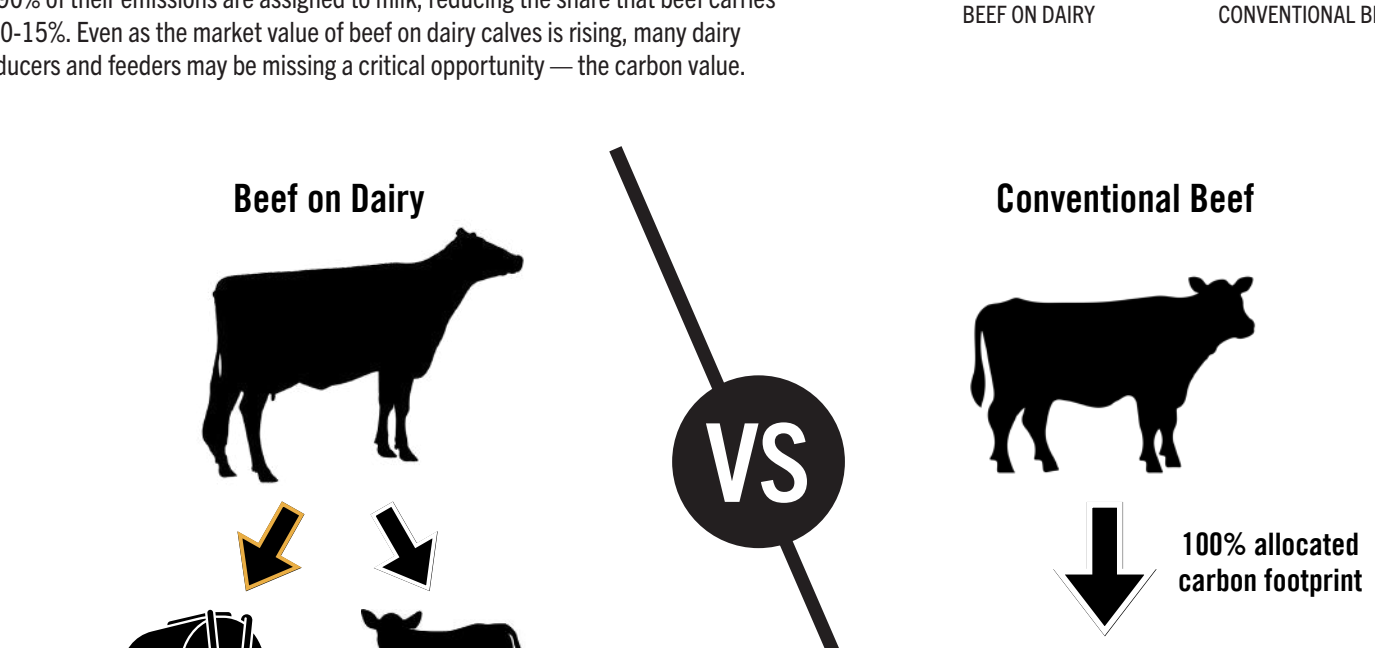
The advent of beef on dairy has created incredible business opportunities for dairies across the U.S. It wasn't long ago that a straw of Angus semen was used as a clean-up strategy and the resulting calves were less than desirable. Today, the beef on dairy strategy is precise. Beef sires are developed specifically for mating on dairy cows to produce a high-value carcass for processing. As the market evolves, is there even more value to be gained from beef on dairy assets? The answer is "yes!" Is your operation positioned to claim it? At a time when beef crossbred calves are setting market records, their hidden value as climate-smart assets is only beginning to emerge.

A dairy producer's guide to leveraging beef on dairy for climate-smart incentives

In life cycle assessments, when an animal (dairy cow) produces more than one product (meat and milk), its total greenhouse gas (GHG) emissions are allocated between the two products. A dairy cow's emissions are largely assigned to milk production and so the footprint of producing a beef-cross calf is relatively small. I like the term "dual-purpose dams." Whereas in a traditional beef system, all GHG emissions from cow-calf to finishing are fully assigned to the meat, resulting in a higher per-pound footprint. Beef on dairy comes from a dual-purpose system where 85-90% of their emissions are assigned to milk, reducing the share that beef carries to 10-15%. Even as the market value of beef on dairy calves is rising, many dairy producers and feeders may be missing a critical opportunity — the carbon value.

MEAT FROM BEEF ON DAIRY ANIMALS HAS A REDUCED CARBON FOOTPRINT COMPARED TO CONVENTIONAL BEEF





Here's why the supply chain likes beef on dairy calves

There are known benefits of beef on dairy calves regarding the supply chain and these factors also contribute to a lower carbon footprint.

- ✔ High feed efficiency and lower total cost of gain
- ✔ Higher volumes of well-marbled and high-grade beef
- ✔ Supply chain value of uniform carcasses and predictable performance
- ✔ Year-round supply of beef calves

Beef on dairy animals are valued in the supply chain due to their year-around availability and carcass merits. In well managed feedyards, they are achieving more than 60% Prime and Choice, no different than conventional beef. Dressing percentages are good and carcasses are larger, resulting in better yield grades. Overall, the beef on dairy animals are highly valued by feedyards and packers. This value is here to stay; it won't be displaced even if the conventional beef supply increases.

Take steps today to position your dairy to capitalize on future opportunities

Beef on dairy animals should be viewed as emissions assets. With a smaller carbon footprint thanks to emissions allocation and genetic selection and performance, these crossbreds present a valuable opportunity for the beef supply chain, particularly for feeders and finishers looking to capitalize on growing demand for Reduced Carbon Verified Beef. As market signals increasingly favor low-footprint, high-performing cattle, pull-through demand will continue to grow. That means greater value potential not just for feedyards, but for dairy producers who are positioned to meet this demand.

To fully realize that value, producers should ensure their programs support traceability and data integrity — laying the foundation for access to sustainability-linked premiums and carbon credits. Traceability is the foundation of Select Sires' ProfitSOURCE® program. Without traceability, even the highest-performing calves risk getting lost in the commodity stream leaving carbon value on the table.

Bottom Line: Your beef on dairy calves are worth more than even the current market reflects. Low Carbon Technologies is currently crafting opportunities for the footprint value to be measured and monetized as product premiums and carbon credits. Consider LCT your partner in creating solutions so you can leverage climate-smart opportunities. ◆

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