

TECHNICAL ARTICLE

Learning to Breed Successfully

The 10 Steps to Developing Your Own Breeding Strategy—A Guide for Young Cattle Breeders

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Maybe you're just about to start your first herd management program. Maybe you're taking over the family farm. Maybe you're interested in breeding—but don't know where to start. The good news: Successful cattle breeding doesn't start with complicated formulas, genomics, or expensive embryo programs. It starts with closely observing your own animals, using data, and consistently making better decisions. This guide describes the ten steps that any breeder—regardless of farm size or experience—can use to develop a sustainable breeding strategy.

Step 1: Define Your Breeding Goal

Before you select a single bull, you need to know: What kind of cow do I want to have in my barn in ten years? This is not a rhetorical question. It is the most important strategic decision a breeder can make—and on many farms, it isn't even explicitly asked.

There is no such thing as the perfect cow. A robotic milking operation needs different animals than a pasture-based operation. A breeding operation competing in herd book competitions has different priorities than a pure dairy producer. Those who breed without a defined goal end up optimizing one thing one day and another the next—and get nowhere in the process.

Farm Type	Priority 1	Priority 2	Priority 3
Robotic milking	Milkability, milking stall.	Hoof health	Cell count
Pasture grazing	Lifespan	Feet and Hooves	Body capacity
Breeding operation	Conformation, cow family	Genomic breeding value	Marketability
Pure dairy producer	Milk Yield / Components	Health Traits	Fertility

The answers to the questions about farm type and priorities form your personal breeding goal. It doesn't have to be set in stone—but it should be written down. A goal that stays only in your head isn't a goal. It's an intention.

My Breeding Goal – Checklist

- ☐ Should milk production increase?
- ☐ Are milk components (fat, protein) important?
- ☐ Do I want cows with longer lifespans?

- ☐ Do I have problems with hooves or legs?
- ☐ Do I have fertility issues in my herd?
- ☐ Do I want to improve the conformation?
- ☐ Do I want to market breeding stock?

Key point: *A breeding goal that hasn't been written down isn't a strategy—it's a hope.*

Step 2: Get to know your cows

Many farm managers know their cows as milk producers. They know which animal is in which pen, which cow was last treated, and which one is currently dry. Successful breeders know their cows as individuals—with their strengths, weaknesses, lineage, and history.

This doesn't require extra hours in the barn. It requires attention. Those who regularly walk through the barn and actively assess the cows get to know their herd in a way that no herd management program can replace.

Most importantly: Don't just note down the problem animals. Most breeders have a very good memory for difficult cows. The best breeders have an equally good memory for their strongest animals—and they systematically ask themselves why exactly this cow is performing so well.

Regular Animal Assessment—What to Look For?

- Legs and hoof placement: Does the animal walk confidently and distribute its weight evenly?
- Udder: Shape, attachment, teat placement—is this compatible with the milking system?
- Body capacity: Can the cow consume enough feed to support her production?
- Fertility: When did the cow last calve, and what was the calving interval?
- Lifespan: How many lactations—and why are animals culled early?
- Susceptibility to disease: Which animals repeatedly appear on the treatment list?

Key statement: *The breeder who gives the most attention to his best cows builds the strongest cow families.*

Step 3: Use the data you already have

Most farms today have significantly more information than ever before. Milking robots log daily milk yields, conductivity, and visit frequencies. Milk testing provides monthly data on fat, protein, and somatic cell count. The herd management program stores fertility data, medical histories, and reasons for culling. The question isn't whether data is available—the question is whether it's being used.

In our consulting practice, we regularly see farms where valuable data treasures lie dormant and unused in databases. Not because the data is missing—but because no one systematically looks at it. That is missed potential.

Existing Data Sources and Their Breeding Relevance

Milking robots / milking systems

- Milk yield, conductivity (early warning for mastitis), rumination activity
- Milking speed (relevant for selection decisions in robotic milking operations)

Milk performance testing (MLP)

- Fat and protein content, somatic cell count, persistence
- Monthly trends reveal the strengths and weaknesses of individual lactations

Herd management program

- Fertility Data: First-service conception rate, gestation period, calving interval
- Health History: Which animals get sick regularly? What do they get sick with?
- Reasons for culling: Why does a cow leave the herd?

Pedigree and breeding data

- Cow family structure: Which lines produce reliably?
- Breeding values of the maternal line: What is the family's heritability?

Key statement: *Data that isn't interpreted isn't knowledge—it's just storage space.*

Step 4: Identifying the Best Cows

A common mistake in breeding practice: The focus is on the weakest animals. Problem cows get the most attention—in treatment, in discussion, and in breeding planning. This is understandable, but counterproductive from a breeding perspective.

The best breeders have internalized a different principle: They focus on their best cows. Not because the problem animals are unimportant—but because the future of the herd is built by the strongest animals, not by eliminating the weakest.

Create a list of your top 10 cows—and update it regularly. Don't rely on gut instinct, but rather on specific criteria. These animals form the foundation of future generations and deserve the most intensive breeding attention.

★ Evaluation criteria for the Top 10 list

- ☐ Milk Yield and Persistence Over Multiple Lactations
- ☐ Health status: Number and type of treatments
- ☐ Fertility: First-service conception rate, calving interval
- ☐ Conformation: Udder, legs and hocks, body structure
- ☐ Lifespan: How many lactations has the cow completed?
- ☐ Cow family: How has the maternal line performed?
- ☐ Genomic breeding value (if typed)

Key statement: *If you don't know your ten best cows by heart, you don't have a breeding program—you have a herd.*

Step 5: Selecting the Right Bulls

It's not the bull with the highest total breeding value that wins. It's not the most expensive bull that wins. It's not the most modern bull that wins. The bull that wins is the one that improves the specific cow with which he is mated. That is the crucial difference between selecting a bull as a purchasing decision and selecting a bull as a breeding strategy.

The first step in any mating decision is therefore not the question: Which bull is currently the best? The first question is: What weakness does this cow have—and which bull best compensates for it?

The Cow's Weakness	What to Look for in a Bull?	What to avoid?	Relevant breeding value
Udder problems / high somatic cell count	Strong udder, good teat placement.	Bulls with RZUdder < 100	RZ Udder, RZ Milking
Weak legs and hooves / Hooves	A Solid Foundation, Hoof Health	Bulls with known hoof problems	RZFit, Hoof Health
Fertility Issues	High fertility	Bulls with Long Intercalving Periods	RZR (Reproduction)
Low Milk Yield	Above-average milk yield	Bulls selected solely for specific nutrients	RZM, kg of milk
Short productive life	Longevity, persistence	Bulls focused solely on short-term performance	RZN, persistence

There is another principle at play here that many young breeders underestimate: strengths should not be compromised. If you mate a cow with excellent udder quality to a bull with low udder scores—simply because that bull ranks highest in the overall index—you risk squandering the cow's strength. Balanced mating does not mean aiming for the average across the board. It means specifically addressing weaknesses without jeopardizing strengths.

Key point: The best bull for the farm is not the best bull on the list. It is the best bull for this specific cow.

Step 6: Avoid inbreeding

In modern Holstein breeding, the genetic base has become narrower than many breeders realize. Many of today's leading bulls trace back to the same handful of influential sires—most notably the lineage centered on Shottle, Goldwyn, and their descendants. This means that breeders who do not actively monitor kinship will accumulate inbreeding more quickly than they realize.

Inbreeding is unavoidable to a small extent and, in controlled amounts, is even a breeding tool. It becomes problematic when it becomes a permanent structural condition. Rising inbreeding coefficients are associated in the long term with declining vitality, reduced fertility, and increased susceptibility to disease—all traits that impact economic performance.

Actively Managing Inbreeding—A Practical Checklist

- ☐ Check the cow's pedigree: Which major sires have dominated the last three generations?

- ☐ Calculate the inbreeding coefficient of the planned calf (this can be displayed automatically in most breeding programs)
- ☐ Goal: Keep the inbreeding coefficient below 6–8%
- ☐ Do not always use the same bull line—even when results are very good
- ☐ Actively seek out bulls from other bloodlines if the herd is closely related
- ☐ Use genomic relatedness (gRZS) as an additional criterion in bull selection

Key message: *Genetic diversity is insurance for the future—and it becomes costly if neglected.*

Step 7: Understand genomics—and use it correctly

Genomics, genotyping, SNP testing, genomic breeding value—many young breeders hear these terms all the time and are unsure what they really mean and whether they're relevant to their operation. The short answer: Yes, they're relevant. But not as a substitute for breeding judgment, rather as a complement to it.

Genotyping provides an early glimpse into a calf's genetic makeup—just a few weeks after birth, long before the first milk yield is measured. This allows decisions to be made earlier and on a more informed basis: Which heifers will be retained for embryo production? Which calves will be marketed more intensively? Which cow families show particular potential?

What genomics can do—and what it can't

Genomics can:

- Identify at an early stage which animals carry particularly valuable genetics
- Identify cow families that pass on above-average traits
- Precisely calculate inbreeding coefficients
- Base selection decisions on a broader data set
- Significantly shorten the wait time for phenotypic performance data

Genomics cannot:

- Replace the breeder's eye
- Guarantee absolute safety for each individual animal (the litter remains in place!)
- Compensate for poor management
- Building cow families—that's the breeder's job

Key point: *Genomics is the high-resolution microscope of breeding. But what you look at with it—and how you interpret what you see—remains the breeder's responsibility.*

Step 8: Use classification

Many operations do without linear description and classification. This is a mistake—especially for young breeders. Classification is one of the best learning tools that organized cattle breeding has to offer.

No herd management program can replace what classification achieves: A trained specialist systematically evaluates the animal across all relevant traits, following a standardized protocol and using comparative data from the entire population. The result is not a subjective impression, but an objective, reproducible assessment.

For young breeders, classification offers something extra: the opportunity to compare their own assessment with that of the classifier. Where do the evaluations differ? Why? What does the expert see that the breeder has overlooked? These discussions are often more valuable than the result itself.

What the classification evaluates

- Udder Quality: Attachment, Depth, Teat Placement, and Shape
- Leg conformation: Hock joint, hoof angle, hoof depth
- Conformation: Body capacity, pelvis, withers height
- Milk characteristics: Condition, rib structure, skin
- Overall impression and final classification

Tip: Be there when the classifier arrives. Ask questions. Take notes on what you learn.

Key point: *Classification is not a bureaucratic process. It's a learning experience for anyone who wants to breed.*

Step 9: Document Like a Pro

Successful breeders don't rely on their memory. Not because their memory is bad—but because memory is selective. We remember the extraordinary. We remember the dramatic. We forget the unremarkable—and often, the unremarkable is the most important.

A systematic breeding log is not a luxury reserved for large operations. It's a tool for any breeder who wants to understand why some decisions worked—and others didn't. Over the course of a few years, this builds up into a wealth of experience that money can't buy.

What Should Be Documented

- ☐ Special cows: What makes them exceptional? Photos, observations, performance data
- ☐ Successful matings: Which combination worked particularly well?
- ☐ Disappointing matings: What was the reason? What would have been better?
- ☐ Cow family development: How has a line developed over the last three generations?
- ☐ Genomic results: Expected value vs. actual result—and why?
- ☐ Embryo flushing: Donors, results, recipients, calf development
- ☐ Breeding sales: Where did the animals go? How have they performed at the buyer's farm?
- ☐ Classification results: Year-over-year comparison

Key phrase: *Those who document learn twice. Once in the moment—and a second time when they read their notes years later.*

Step 10: Be patient—and think long-term

Perhaps the most important point. And the most difficult one.

Breeding is not a sprint. Breeding is a marathon. A mating decision made today will not show its effects for three to five years—by the time the calf is born, raised, inseminated for the first time, and finally enters its first lactation. Anyone who fundamentally changes their strategy after every genotyping result, after every unmet expectation, and after every disappointing lactation will never reach their goal.

The most successful breeding operations of the past decades were not characterized by the most aggressive selection. They were characterized by consistency. A clear breeding line, consistently pursued over many generations, generates more long-term genetic progress than any strategic shift based on the latest trend.

This does not mean being rigid. Breeding goals can and should be adjusted when conditions change. But the pace of these adjustments should be guided by the generational interval in cattle breeding—not by the news cycle of the breeding scene.

The guiding principles for long-term breeding

- ☐ Don't chase every trend—check whether it aligns with your own breeding goals
- ☐ Stick to a clear plan: Define breeding goals and implement them consistently
- ☐ Monitor results—over multiple lactations, not just for a single cow
- ☐ Learn from mistakes—and draw the right conclusions from them
- ☐ Think in terms of generations: What do I want to have in my barn in ten years?
- ☐ Celebrate successes—because good cow families don't come from self-doubt

Key point: *Breeding isn't decided in a single mating cycle. It's decided by the sum of many wise decisions made over many years.*

The 10-Point Checklist for Young Breeders

All ten steps at a glance—print them out and hang them in your office.

Step		Step	
☐	I have a clear breeding goal.	☐	I select bulls carefully.
☐	I know my best cows.	☐	I avoid inbreeding.
☐	I use existing farm data.	☐	I work with genomics.
☐	I monitor my animals regularly.	☐	I use classification and conformation evaluation.
☐	I systematically identify my top cows.	☐	I document my decisions.
☐	I learn from my best animals, not just my worst ones.	☐	I think in terms of generations—not months.

Conclusion: The breeder decides

Successful cattle breeding is no secret. It starts with attention to detail, consistency, and a willingness to learn. Those who know their animals, use data, promote the best cow families, and think long-term will see progress year after year—even without a million-dollar budget, even without access to the world's most expensive embryos.

Modern breeding today offers tools that previous generations could only dream of. Genomics, global breeding value estimation, international genetics, IVF—all of these are available. But tools are not a program. Tools need someone who knows how to use them.

Technology alone does not determine the success of a herd. It is people who make the decisions.

These ten steps are no guarantee of the next superstar in the bull catalog. They are the foundation upon which sustainable breeding success is built over the long term. Those who consistently follow them do not breed better than everyone else—they breed more systematically. And in the long run, a systematic approach beats luck.

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About the Author

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