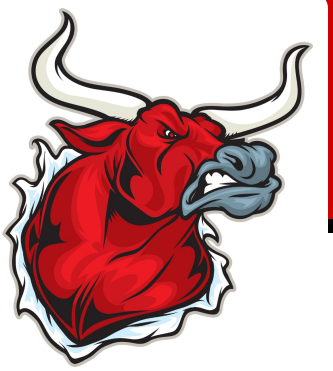
THE BULLVINE

Dairy business decisions. No fluff.



Genomic Testing ROI Action Guide

How to turn test results into better breeding, culling, beef-on-dairy, and replacement decisions

TEST

Get the genomic signal early.

SORT

Put animals into decision lanes.

ACT

Change breeding, culling, and replacement moves.

USE THIS AFTER THE CALCULATOR

The genomic test is not the win. The win is what changes in the barn after the results arrive: which heifers get raised, which animals get sexed semen, which cows go beef-on-dairy, and which replacements never get a stall they have not earned.

Built as the post-result action guide for The Bullvine Genomic Testing ROI Calculator and the dairy genetics pillar article.[1][2]

Use this guide to decide which animals get sexed semen, beef semen, sold, flushed, or stopped before they eat another dollar.

Open the Genomic Testing ROI Calculator

Disclaimer: This guide is for decision-support purposes only and is not genetic, veterinary, legal, tax, or financial advice.

Sources, clickable URLs:
1. https://www.thebullvine.com/tools/Genomic-Testing-ROI-Calculator.html
2. https://www.thebullvine.com/dairy-cattle-genetics-explained-tpi-nm-gtpi-and-genomics/

CORE PRINCIPLE

Why genomic testing ROI matters

A genomic test does not make a herd more profitable by existing in a spreadsheet. It creates value only when it changes a decision before money is sunk into the wrong animal.

That is the hard line. Genomics has helped double the rate of U.S. dairy genetic gain, with average annual Net Merit progress reported at $85 since 2010 versus $40 in the previous five years.[1] CDCB's 2025 Lifetime Merit update keeps the focus on profit, ranking animals across nearly 40 economically important traits with heavier attention to feed efficiency, component pricing, and fertility.[2]

TEST → Know the animal early

SEGMENT → Top, middle, bottom

ACT → Breed, sell, cull, flush

MEASURE → Rerun the math

THE BULLVINE RULE

No action, no ROI. If you test every heifer and still breed, raise, and cull exactly the same way, you bought an expensive sorting report and ignored the sort.

The practical value is decision leverage

- **Before raising cost:** Identify the bottom group before two years of feed, labor, housing, bedding, interest, and opportunity cost pile up.
- **Before semen spend:** Put sexed semen where the replacement value is real and beef semen where the dairy genetics are not needed.
- **Before the cull pen:** Stop protecting mediocre cows just because replacements are expensive. Use numbers, not nerves.
- **Before inbreeding damage:** Check genomic relationships and haplotypes before doubling down on fashionable bloodlines.

PRODUCER TEST

If the result does not change at least one of these decisions - keep, sell, breed dairy, breed beef, flush, buy, or cull - the calculator is telling you the management system is the bottleneck.

Sources, clickable URLs:
1. https://www.frontiersin.org/articles/10.3389/fgene.2022.994466/full
2. https://uscdcb.com/national-dairy-genetic-index-update-base-change-set-for-april-2025/
3. https://www.thebullvine.com/dairy-cattle-genetics-explained-tpi-nm-gtpi-and-genomics/

CALCULATOR OUTPUTS

How to read your calculator result

The ROI calculator translates genomic testing from science language into business language. Read it like a replacement-pipeline audit, not like a sire catalog.[1]

USE THIS GUIDE BASED ON YOUR RESULT

Green result

Go to pages 4, 6, 9

Yellow result

Go to pages 4, 6, 8

Red result

Go to pages 4, 7, 8

Output	Plain-English meaning	What to do with it
Net ROI	Total value captured after testing, semen, and implementation costs.	Ask whether this is big enough to justify a new workflow.
ROI %	Return per dollar invested. A small herd can have a high ROI but modest total dollars.	Compare scenarios, not neighbors.
Payback period	How long before the decision changes repay the testing cost.	Short payback usually means strong culling or beef-on-dairy leverage.
Per-tested-animal value	Average economic value of knowing each animal earlier.	Use it to decide whether whole-group testing beats targeted testing.
Per-cow herd impact	The result spread across the milking herd.	Use it for budget conversations with ownership, lenders, and advisors.

Use scenario discipline

Run three versions: conservative, realistic, and aggressive. The 2018 Journal of Dairy Science cost-benefit model found that genomic testing value depends heavily on reproduction, replacement rate, test cost, sexed semen use, and surplus-heifer economics.[2] That is exactly why one calculator result should not become a religion.

EXAMPLE, NOT A PROMISE

A 500-cow herd testing 180 heifer calves at $45/head spends $8,100. If testing prevents raising just five poor replacements and the farm's real avoided cost is $2,000/head, the avoided-cost lever alone returns $10,000 before counting better matings, beef-on-dairy premiums, or future genetic gain. Change those assumptions and the result changes fast.

Use your actual cost to raise heifers. Iowa State Extension's 2024 examples put total 24-month heifer raising cost near $2,651 for a conventional high-production herd, but it varies by system and labor accounting.[3]

Sources, clickable URLs:
1. https://www.thebullvine.com/tools/Genomic-Testing-ROI-Calculator.html
2. https://doi.org/10.3168/jds.2017-13476
3. https://www.extension.iastate.edu/dairyteam/files/documents/What's%20It%20Cost%20to%20Raise%20Heifers%202024.pdf

DECISION BANDS

Recommendation bands: what to do next

The calculator bands are not trophies. They are marching orders. The color names below match the calculator logic; the print design stays black, grey, white, and Bullvine red.

GREEN
Test aggressively
Broad testing. Hard cutoffs. Fast action.

YELLOW
Test strategically
Target the animals where the decision is open.

RED
Targeted groups only
Use a trial group and fix the bottleneck.

Band	What it means	Next move
Green: Test aggressively	The economics support broad testing and decisive action.	Test all females early. Sort hard. Use sexed semen on the top group, beef semen on the lower group, and sell obvious non-replacements before they consume capital.
Yellow: Test strategically	Testing pays, but one bottleneck is limiting value.	Target animals where the decision is genuinely open: borderline heifers, sexed-semen candidates, donor candidates, and cows being considered for beef semen.
Red: Test only targeted groups	The test cost is high relative to decision leverage.	Do a trial group, validate predictions against real herd data, and fix the management bottleneck before scaling.

DO NOT CONFUSE A RED RESULT WITH BAD GENETICS

A red result often means the herd cannot act on the information yet. Low surplus heifer numbers, weak pregnancy rate, limited culling room, or poor calf markets can all choke ROI even when genomic information is useful.

Band-specific rules of thumb

- **Green:** Build a written cutoff. Everyone should know which percentile gets sexed semen, which percentile gets beef, and which animals leave.
- **Yellow:** Spend first on decisions with the most uncertainty. Testing animals whose fate is already obvious is expensive theater.
- **Red:** Use genomics as a diagnostic tool. If the predictions match later performance, you have evidence to change the breeding policy next year.

UW Extension's beef-on-dairy profitability tool is built around replacement females needed and the opportunity to capture premium calf value after semen cost, which is the same core logic behind this banded approach.[3]

Sources, clickable URLs:
1. https://www.thebullvine.com/tools/Genomic-Testing-ROI-Calculator.html
2. https://doi.org/10.3168/jds.2017-13476
3. https://livestock.extension.wisc.edu/articles/determining-dairy-farm-profitability-when-using-beef-semen/

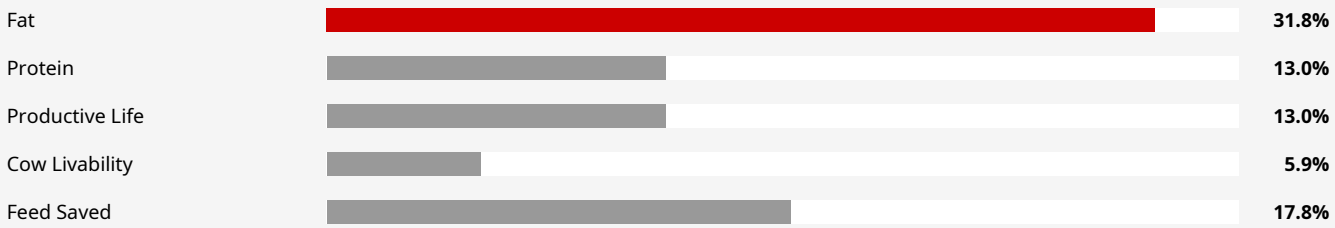
WHERE THE MONEY HIDES

The five biggest ROI levers

The easy story is that genomics helps you pick better bulls. Fine. But the bigger money is usually in the decisions around the female population.

Lever	How it creates value	Producer action
Heifer raising cost avoided	Poor replacements are identified before the farm funds their full development.	Put a real farm-specific raising cost beside each genomic cutoff.
Genetic selection value captured	Higher-merit animals get more chances to make replacements.	Breed the top tier to sexed dairy semen and avoid wasting dairy semen on the bottom tier.
Beef-on-dairy opportunity	Lower-merit females can generate more valuable terminal calves without weakening the replacement pipeline.	Match beef semen use to replacement inventory, pregnancy rate, and calf market access.
Component/genetic market alignment	NM$ now strongly prices fat, protein, feed saved, longevity, fertility, livability, and health.	Select for the milk check you actually ship into, not yesterday's volume bias.
Avoiding poor replacement decisions	Parentage, haplotype, and genomic merit reduce expensive guesswork.	Use results in mating software and replacement meetings, not just in the genetics file.

2025 NET MERIT RELATIVE EMPHASIS, SELECTED TRAITS



THE COMPONENT REALITY

The 2025 Net Merit revision gives fat a 31.8% relative emphasis, protein 13.0%, Productive Life 13.0%, Cow Livability 5.9%, and Feed Saved 17.8% when Body Weight Composite and Residual Feed Intake are combined.[1] That is not a beauty contest. It is a profit formula.

The replacement lever is just as real. Iowa State Extension's 2024 example shows $2.65/day before labor and $3.15/day with labor for a conventional 26,000-pound herd, producing a 24-month total near $2,651.[2] That is why identifying the wrong heifer early beats admiring her after the bill is paid.

Sources, clickable URLs:
1. https://www.ars.usda.gov/ARSUserFiles/80420530/Publications/ARR/nmcalc-2025_ARR-NM9.pdf
2. https://www.extension.iastate.edu/dairyteam/files/documents/What's%20It%20Cost%20to%20Raise%20Heifers%202024.pdf
3. https://livestock.extension.wisc.edu/articles/determining-dairy-farm-profitability-when-using-beef-semen/
4. https://uscdcb.com/national-dairy-genetic-index-update-base-change-set-for-april-2025/

ANIMAL SEGMENTATION

Decision playbooks: top, middle, bottom

The calculator gives you economics. Genomics gives you rank. The job now is to turn both into a simple breeding and replacement policy.

Segment	Typical animals	Default playbook
Top-end animals	Elite 20-30%, donor candidates, highest NM$/GTPI or custom index females.	Sexed dairy semen. Consider embryo work for the top 1-5% if the herd can manage recipients, timing, and cash flow.
Middle animals	Solid commercial females where inventory needs matter most.	Flexible lane. Use dairy semen if replacements are short; shift more beef if replacements are covered and calf premiums are strong.
Bottom-end animals	Low genetic merit, poor parentage confidence, bad health/repro profile, or inbreeding risk.	Beef semen, sell early, or do not invest in raising unless the herd has a specific strategic reason.

Connect the test result to actual work

- **Sexed semen:** Reserve it for females whose daughters you genuinely want. Do not use it as a blanket habit.
- **Beef semen:** Use it to create terminal value from females that do not need to make replacements. Penn State Extension notes beef-on-dairy can add value, but sire selection, calf health, market outlet, and management still matter.[3]
- **Embryo work:** Keep it for the elite edge. If the donor list is too long, it is not elite.
- **Culling and selling:** Tie decisions to inventory. Surplus heifers make aggressive sorting possible; tight inventory calls for more caution.

MEETING RULE

No breeding meeting ends until every tested animal has a lane: replacement builder, flexible middle, terminal beef, donor candidate, sell, or do-not-raise.

Sources, clickable URLs:
1. https://www.thebullvine.com/dairy-cattle-genetics-explained-tpi-nm-gtpi-and-genomics/
2. https://doi.org/10.3168/jds.2017-13476
3. https://extension.psu.edu/wheres-the-beef-navigating-raising-beef-on-dairy-crosses-and-the-markets/

AVOID THE TRAPS

Common mistakes that kill ROI

Genomic testing does not fail only because the science is weak. It fails because the farm buys information and then protects old habits.

Mistake	Why it hurts	Better move
Testing without acting	Turns the test into overhead.	Decide in advance which thresholds trigger breeding, selling, or culling.
Keeping too many mediocre replacements	Capital gets trapped in animals that do not improve the herd.	Raise to need, not to comfort.
Ignoring inbreeding	Can quietly tax fertility, health, and production.	Use genomic mating tools and avoid carrier-to-carrier matings.
Treating all heifers the same	Wastes sexed semen and barn space.	Segment early and manage groups differently.
Overestimating ROI	Aggressive assumptions create paper profit.	Rerun the calculator with conservative prices, higher costs, and slower action.

The inbreeding warning is not academic. A 2024 Journal of Dairy Science study in German Holsteins found that a 1% increase in inbreeding was associated with measurable depression in 305-day milk yield, fat, protein, and calving interval, depending on the estimator used.[1]

THE SACRED COW TO CHALLENGE

Do not keep a heifer because she is already here. Sunk cost is not a breeding strategy.

Genomic systems also flag undesirable recessive conditions through haplotype analysis, which is one reason the test result belongs inside the mating program, not outside it.[2]

Sources, clickable URLs:
1. https://doi.org/10.3168/jds.2023-23728
2. https://www.frontiersin.org/articles/10.3389/fgene.2022.994466/full
3. https://doi.org/10.3168/jds.2017-13476

BRING THE RIGHT PEOPLE

Advisor discussion checklist

This is the page to print before the advisor meeting. The goal is not to ask whether genomics is good. The goal is to decide what the herd will do differently next month.

Advisor	Ask this	Bring these numbers
Genetic advisor	Which index should drive our ranking: NM$, GTPI, custom index, components, health, fertility, or a blend?	Current sire stack, genomic report, inbreeding/haplotype flags, top/middle/bottom cutoffs.
Veterinarian	Do our health, repro, and calf systems support the breeding strategy we want?	Pregnancy rate, conception by semen type, calf mortality, heifer disease history, cull reasons.
Nutritionist	Are replacements developed well enough to express the genetics we are buying?	Age at first calving, body weight targets, growth rates, ration cost, fresh heifer performance.
Accountant/lender	What is the cash-flow effect of testing, semen changes, fewer heifers, and calf revenue?	Testing budget, semen cost, heifer raising cost, calf sale value, replacement inventory.

BRING THESE NUMBERS

Testing cost per head; number of calves or females tested; heifer raising cost to freshening; cull rate; replacement rate; age at first calving; 21-day pregnancy rate; conception rate by semen type; beef-cross calf price; dairy bull calf price; heifer inventory by age group; current genetic index average; top and bottom cutoff values.

CDCB's merit indices estimate transmitted lifetime profit in dollars across economically important traits, but your farm still has to decide which constraints matter most in your system.[1] The calculator result is the opening document for that conversation, not the final answer.[3]

Sources, clickable URLs:
1. https://uscdcb.com/national-dairy-genetic-index-update-base-change-set-for-april-2025/
2. https://www.ars.usda.gov/ARSUserFiles/80420530/Publications/ARR/nmcalc-2025_ARR-NM9.pdf
3. https://www.thebullvine.com/tools/Genomic-Testing-ROI-Calculator.html

FROM RESULT TO EXECUTION

Your 30-day action plan

Do not let the result age in the inbox. The first month should turn the calculator output into a working policy.

Week	Action	Done when
Week 1	Review calculator result and herd goals. Run conservative, realistic, and aggressive scenarios.	You know the band, the payback period, and the two assumptions that move ROI the most.
Week 2	Segment animals. Rank tested females into top, middle, and bottom groups.	Every animal has a provisional lane: sexed dairy, conventional dairy, beef, donor, sell, or hold.
Week 3	Match breeding strategy. Update semen allocation, mating rules, inbreeding limits, and beef-on-dairy targets.	The breeding team has a written rule sheet and no one is freelancing from habit.
Week 4	Review economics and implement. Update budgets, heifer inventory, cull list, and advisor follow-ups.	The first changed decisions are in the system, with a review date already scheduled.

ONE-PAGE WORKSHEET

My ROI band: _____ Testing group: _____ Test cost/head: _____ Heifer raising cost: _____ Beef-cross premium: _____ Replacement need/month: _____ Bottom cutoff: _____ Top cutoff: _____ Review date: _____

What success looks like

- **Operational:** Breeding codes match genetic rank.
- **Financial:** The farm can explain where ROI comes from: avoided raising cost, better replacements, beef-on-dairy revenue, component alignment, or fewer bad bets.
- **Behavioral:** The next hard heifer decision is made from the policy, not from who is standing in the office that morning.

Sources, clickable URLs:
1. https://www.thebullvine.com/tools/Genomic-Testing-ROI-Calculator.html
2. https://www.thebullvine.com/dairy-cattle-genetics-explained-tpi-nm-gtpi-and-genomics/

NEXT MOVE

Closing CTA: rerun the math

The first calculator run tells you where you stand. The second and third runs tell you whether the strategy survives real-world pressure.

RERUN THREE VERSIONS

Conservative: higher testing and semen costs, lower beef-cross premiums, slower culling.

Realistic: your current numbers, not coffee-shop averages.

Aggressive: strong pregnancy rate, firm cutoffs, disciplined beef-on-dairy use, and no emotional heifer hoarding.

Then take the result back to the genetics pillar article and pressure-test the index choices behind the strategy. TPI, NM$, GTPI, component weighting, feed saved, fertility, livability, and inbreeding all matter, but they do not matter equally on every farm.[2][3]

Rerun the Genomic Testing ROI Calculator

Read the Dairy Genetics Pillar Guide

BULLVINE CLOSING LINE

Genomic testing does not reward the farm that collects the most data. It rewards the farm willing to let the data make a decision.

Disclaimer: This guide is for decision-support purposes only and is not genetic, veterinary, legal, tax, or financial advice.

Sources, clickable URLs:
1. https://www.thebullvine.com/tools/Genomic-Testing-ROI-Calculator.html
2. https://www.thebullvine.com/dairy-cattle-genetics-explained-tpi-nm-gtpi-and-genomics/
3. https://www.ars.usda.gov/ARSUserFiles/80420530/Publications/ARR/nmcalc-2025_ARR-NM9.pdf
4. https://livestock.extension.wisc.edu/articles/determining-dairy-farm-profitability-when-using-beef-semen/