

Robust by Design

How PIC combines resilience plus resistance to deliver predictable performance in commercial swine systems.

The market is asking a practical question: what kind of genetics help producers manage disease pressure, production variation and margin risk at the same time?

PIC's answer is robustness by design: a deliberate approach that combines resilience plus resistance to help producers deliver more predictable, consistent performance today while advancing targeted disease innovations for the future.

Every production system faces pressure. Health challenges, environmental variation, feed changes and management shifts can affect how consistently pigs perform and how many reach full value. Those performance differences add up, affecting cost per pig, output and ultimately profitability.

That raises a fundamental question for genetic progress: Should we breed pigs that are resilient through inevitable pressures or pigs that resist specific disease threats? For commercial swine operations, the answer is both.

PIC defines robustness as the combination of resilience and resistance working together to deliver predictable, consistent performance across real-world production conditions. Together, they create a stronger foundation for animal health, productivity and profitability.

Two different, essential tools

Distinction matters because resilience and resistance solve different problems:

Resilience has broad value because commercial swine production rarely encounters one isolated challenge at a time. Pigs typically face overlapping health, environment, nutrition and management pressures throughout the production cycle.

Resistance offers a different advantage. By preventing a specific disease threat, it can support pig health while contributing to stronger herd-level disease control and biosecurity.

Resilience and resistance should not be positioned as competing choices. They are complementary tools that solve different problems and, together, build a more robust pig.

	What it means	What it looks like
Resilience Protects Performance	The ability to maintain or quickly regain performance following a disease, environment or management challenge	A pig maintains growth more effectively during a challenge or returns to expected performance more quickly
Resistance Limits Pathogen Impact	The ability to reduce susceptibility, infection, pathogen load or transmission associated with a specific disease threat	A pig is protected from a defined disease, such as porcine reproductive and respiratory syndrome (PRRS), or carries and sheds less virus

Designing a more robust pig

Robustness isn't a single gene or trait. It's the result of intentionally selecting for multiple characteristics that improve performance in commercial conditions.

At PIC, that means advancing resilience and resistance simultaneously.



Together, these advancements are designed to build pigs that better withstand broad production pressures and can be protected from specific, defined disease threats.

Resilience development	Resistance development
- The GNX program compiles 150,000+ commercial customer data points annually to identify families that express desired traits on-farm and inform selection. - Digital phenotyping increases the precision and pace of improvement by removing subjectivity in trait measurement for a more accurate prediction of longevity. - Accurate real-world data strengthens genomic selection algorithms for sow productivity and wean-to-finish performance. - Results in offerings like CBV Max and CBV Plus.	- Gene-editing technology can target specific, high-impact disease threats. - The U.S. Food and Drug Administration (FDA) granted approval to PIC for the gene edit used in its PRRS-resistant pig, determining that the technology is safe and effective. - Gene editing adds a targeted tool. - May support broader goals for animal well-being, antibiotic stewardship and responsible production when used as part of an integrated health and management strategy.

Selection built for the real world

A robust pig isn’t developed under ideal conditions. It’s selected for using data from commercial environments – on operations just like yours.

The end goal: More efficient, high-quality pork produced per sow per year.

To deliver on this goal, PIC’s selection philosophy is built around four principles:

Performs in real-world conditions: PIC selects pigs that perform across health, flow and management variations in actual commercial production environments rather than relying only on low-pressure settings that may not reflect commercial production.

Evidence at scale: PIC selection decisions draw on 1.7 billion commercial data points, a 60-million animal database and more than 750 index-managed farms¹. Decisions are based on observed commercial production outcomes, not assumptions.

Whole-pig value: PIC evaluates more than 35 traits spanning sow productivity, growth, robustness and carcass value². This whole-pig approach is designed to create value across the production system rather than optimize one trait at the expense of another.

Accountable expertise: PIC’s commercial model is built around whole-operation performance and profitability, not just maximizing genetic index values. The model combines commercial, animal, farm and trait data with 44.6 billion estimated breeding value (EBV) combinations³.

Together, these principles connect genetic selection to the place it ultimately has to deliver: in commercial production.

Measuring robustness progress

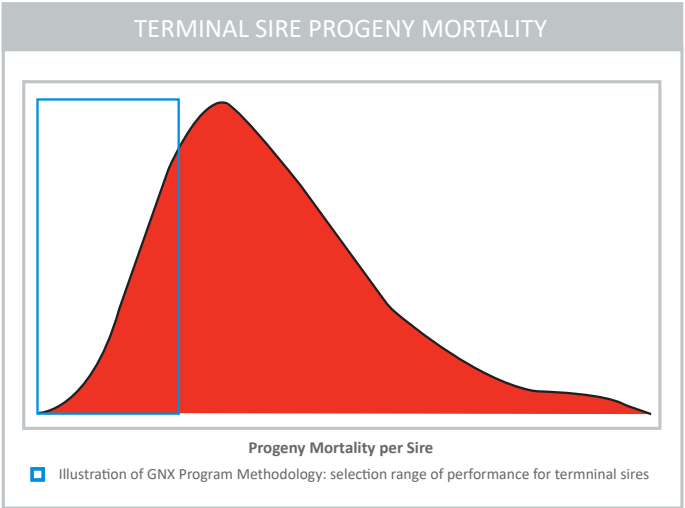
Building robustness is only valuable if selection results in measurable genetic improvement. PIC tracks genetic progress over time to evaluate whether selection decisions are translating into stronger commercial outcomes.

Progress in action: Progeny mortality

Commercial data helps reveal differences among sires that may otherwise look similar in low-pressure “ideal” environments. Through GNX, PIC captures those differences and uses them to inform which genetics advance.

This chart shows the distribution of progeny mortality performance for 1,197 terminal sires evaluated in the GNX program from 2022 to 2025⁴.

The spread illustrates meaningful variation among sires. This measurable variation unlocks genetic selection and progress.



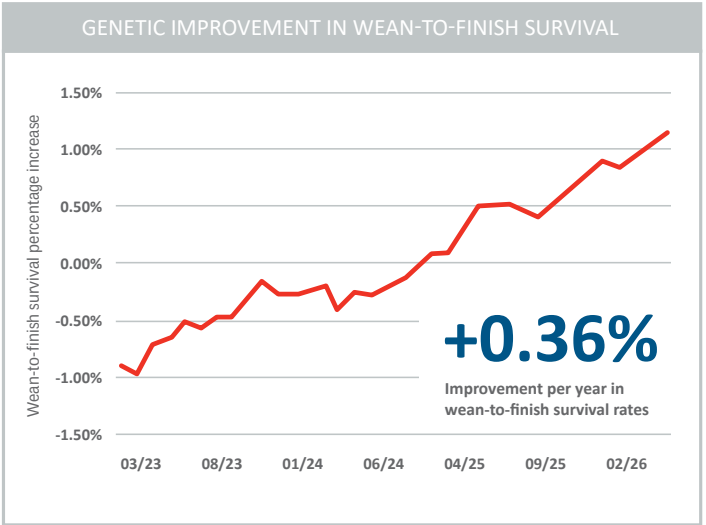
¹PIC internal research and development program data, 2025.
²PIC internal research and development program data, 2025.
³PIC internal research and development program data, 2026.
⁴PIC GNX program data collected from 2022-2025 representing 1,197 sires.

Progress in action: Wean-to-finish survivability

Genetic progress should do more than deliver a good year or a favorable health period. It should accumulate over time and be verified through continued measurement.

This graph tracks PIC genetic improvement in wean-to-finish survival from March 2023 to December 2025⁵.

The index trend began below the baseline and improved over time. PIC data shows a 0.36 percentage-point improvement per year in wean-to-finish survival rate.



Commercial validation

Commercial data and field comparisons further validate the approach across maternal and terminal lines. The following proof points show how PIC genetics perform against benchmarks and competitors, and on customer farms.

Commercial proof: The maternal edge

A comparison of the top 25% of Agri-Stats farms and the top 25% of PIC farms over the same period shows a clear performance gap across several maternal measures⁶.

In this comparison, PIC farms weaned 4.5 more pigs per sow per year, delivered 1.3 more pigs born alive per litter and experienced 4.2 percentage points lower pre-wean mortality.

These differences compound across the production system but pre-wean mortality stands out. Four fewer pigs lost per 100 born carries through to every downstream flow.

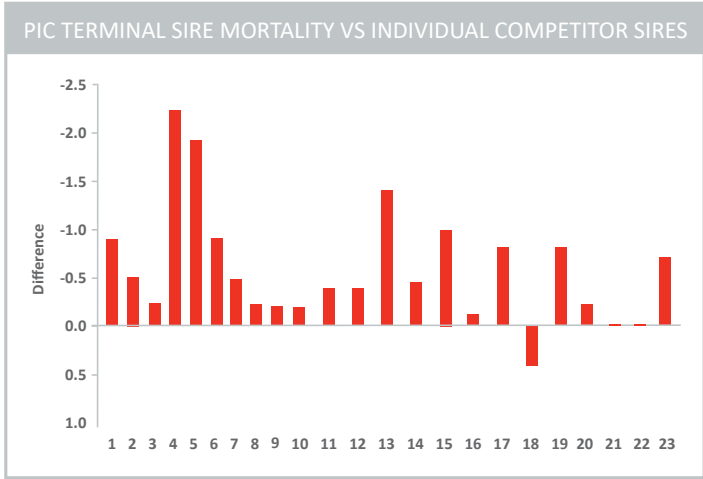
	Agri-Stats Top 25%	PIC Top 25%	PIC Advantage
Pigs / sow / year	28.3	32.8	+4.5
Born alive / litter	14.5	15.8	+1.3
Pre-wean mortality (%)	16.9%	12.7%	-4.2%

Commercial proof: The terminal edge

PIC sires are evaluated in commercial conditions against competitive commercial sire lines to measure differences in observed performance.

Across 23 trial comparisons involving nine competitor sire lines, PIC sires averaged 0.46% lower mortality. Even a fraction of a point represents more pigs reaching market across every closeout group.

These results combined with measured differences in growth, efficiency, and carcass value drive predictable bottom-line results. Measuring observed performance helps PIC identify otherwise invisible differences and use them to inform selection decisions.



⁵PIC data collected from March 2023 to December 2025. Individual outcomes vary by system and management.
⁶Based on PIC individual farm data collected from January 2026-March 2026 representing 1.039M sows in North America. Agri-Stats as reported average for months January 2026-March 2026, representing 2.3M sows or 50M weaned pigs annually in U.S. and Canada. Individual outcomes vary by system and management.
⁷Based on PIC U.S. trial data from 2025-2026.

Customer results in practice

The performance edge holds up in PIC customer operations, each with different pressures and management styles. The following customer case studies represent operations spanning from 2,500 to 82,000 sows in North America and Latin America.

Case study 1: 30,000-sow operation improves sow survival by 6.9%

#1

Goal: Improve sow longevity and lift productivity. A high sow removal rate was affecting parity structure and output.

Actions taken: The operation used PIC Camborough® females, implemented and monitored body condition scoring, used sow pelvic organ prolapse (POP) EBV to base culling decisions on genetic merit, and strengthened documentation of removal reasons to inform future decisions.

Results⁸: An improvement of 3.42 pigs per sow per year across 30,000 sows creates material production and economic value for this operation.

Performance metric	Net Change
Sow mortality rate, annualized	-6.9%
POP removal, annualized	-2.0%
Farrowing rate	+3.9%
Total born per litter	+0.33
Live born per litter	+0.49
Pigs per sow per year	+3.42

Case study: 2,500-sow herd achieves 39.1 pigs per sow per year

#2

Goal: Improve sow productivity and increase pigs weaned per sow per year.

Actions taken: The operation used PIC Camborough® females and implemented disciplined gilt development to help express their full genetic potential.

Results⁹: Performance remained strong across all four quarters. Live births per litter held between 17.0 and 17.3, and pigs per sow per year held between 38 and 40, while the MetaFarms benchmark remained between 31 and 33 pigs per sow per year. The consistency matters: these results were sustained across the year, not driven by one favorable quarter.

This case shows how disciplined gilt development and Camborough® genetics can support sustained top-tier productivity, not just a single favorable quarter.

Performance metric	Achieved	Compared to Top 10% of MetaFarms Production Index
Pigs per sow per year	39.1	+6.65
Live born per litter	17.2	+1.77
Sow non-productive days	32.1	-21.2

⁸Based on PIC individual customer farm data from 2024-2026, representing 30,000 sows. Individual outcomes vary by system and management.

⁹Based on PIC individual customer farm data from January 2025 to December 2025, representing 2,579 sows. Comparison to MetaFarms Production Index 2025, a recurring analysis of anonymous production data using a standardized set of business logic and calculation algorithms representing 56% of U.S. finishing herds. Individual outcomes vary by system and management.

¹⁰Based on PIC individual customer farm data collected from April 2025 to March 2026, representing 82,000 sows. Agri-Stats top 25% operations data from December 2025 to February 2026. Individual outcomes vary by system and management. Weaned pig cost savings calculation used: \$0.74 savings per pig sold x 34.7 pigs per sow per year x 82,000 sows on farm = \$2,105,596 in estimated savings.

Case study:
82,000-sow herd estimates \$2 million
in annual weaned pig cost savings

#3

Goal: Reduce cost per pig and increase total pigs born.

Actions taken: This operation incorporated PIC Camborough® genetics while tracking and managing other inputs driving the cost per weaned pig to ensure productivity gains would not be absorbed elsewhere in the system.

Results¹⁰: Combined with input cost management, this operation estimated savings of \$0.74 per pig sold. At 34.7 pigs per sow per year across 82,000 sows, the operation estimated roughly \$2 million per year in weaned pig cost savings. This case study illustrates the value of pairing productivity gains with disciplined cost management.

Performance metric	Achieved	Compared to Top 25% of Agri-Stats
Weaned pig cost savings	\$2M USD	--
Total born per litter	17.45	+1.31
Pigs per sow per year	34.7	+6.36

Turning robustness into return

The performance gap between average and top-quartile operations carries a significant financial impact. From May 2025 through April 2026, average reported net profit was \$39 per hog compared with \$53 per hog for the top 25% of operations – a \$14 difference per hog¹¹. Genetics alone don't determine where an operation lands, but robust genetics can help producers capture more of that opportunity by supporting three outcomes:

- 1. Reduce variation and increase the number of pigs that stay on track.
- 2. Deliver more full-value pigs to market with fewer wean-to-finish losses and fallouts.
- 3. Plan space, feed and packer commitments with greater confidence, supporting steadier margins.

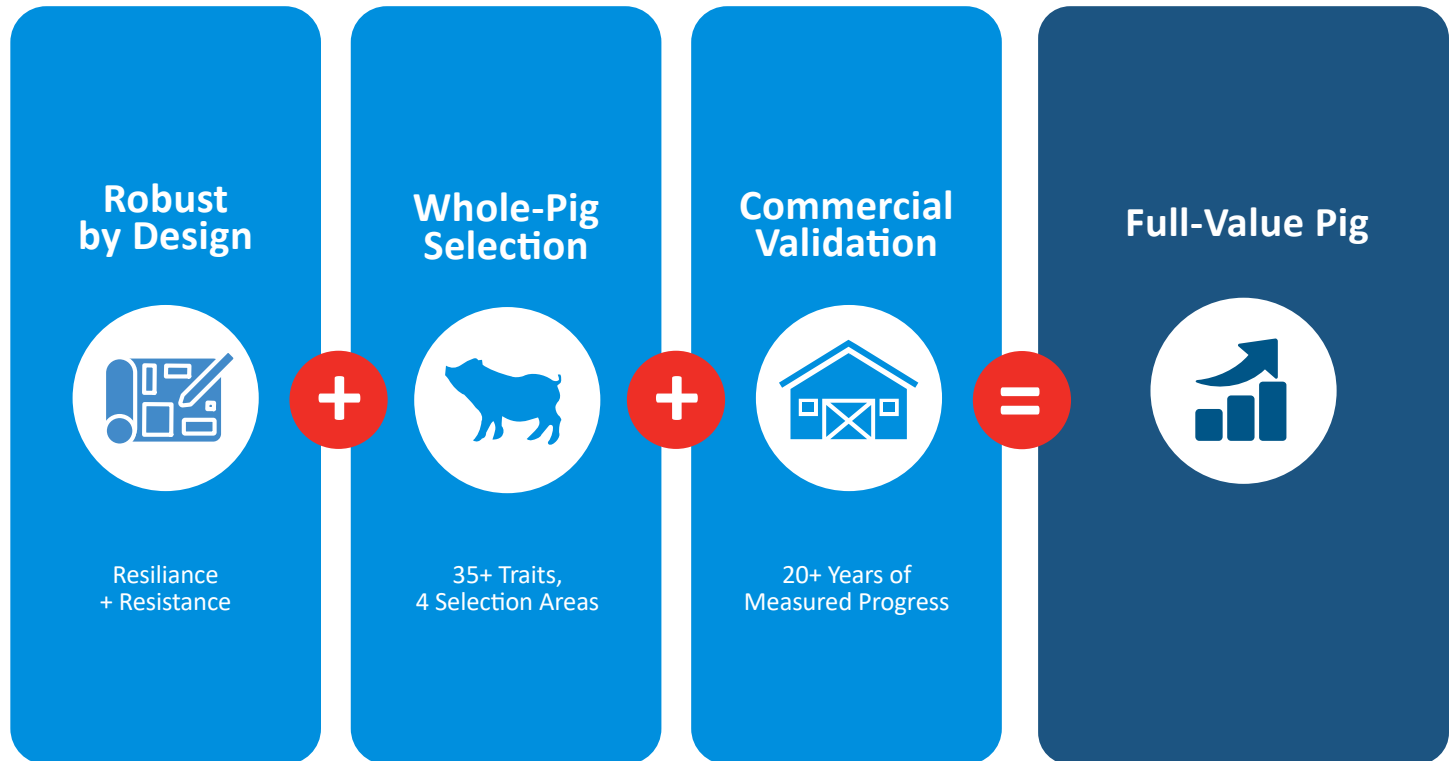
By selecting for robustness, PIC helps producers build greater consistency into their production systems – creating more opportunity to protect performance, reduce variability and improve profit potential.

“Producers face multiple challenges every day. That's why genetic progress isn't about choosing resilience or resistance. It's about combining both to build robust pigs that deliver more consistent performance, reduce variability, and create greater opportunity to capture value across the production system.”

Matt Culbertson, PIC Chief Operating Officer

Adding up to a full-value pig

The case for robustness comes together across multiple layers: complementary priorities in resilience plus resistance, whole-pig selection, commercial validation and customer results.



PIC doesn't select for resilience alone or pursue resistance as a standalone answer. Instead, PIC uses a broader strategy combining resilience and resistance with selection across more than 35 traits. Then, progress is validated under commercial conditions across maternal and terminal lines.

The result is more full-value pigs designed to perform through commercial challenges and create more predictable economic value across the production system, from sow to market.

The future of genetic progress is not resilience or resistance alone. It is robustness by design.

¹¹ Based on Agri-Stats May 2025-April 2026 reported operation farm profits per hog.

Learn more about how robustness by design can translate into more full-value pigs in your production system.

PIC.com

©PIC 2026 All Rights Reserved. PIC® is a registered trademark. August 2026

PIC®