

A new solution helps improve herd uniformity, closes the Gilt Gap

Zoetis launches IMPROVEST® (gonadotropin releasing factor analog-diphtheria toxoid conjugate) 0.2 mg/mL for estrus suppression in market gilts

Producers have known for decades that gilts, which make up about half of market swine production, just don't perform as consistently as barrows, creating a production gap between gilts and barrows. The launch of IMPROVEST helps close the Gilt Gap by temporarily suppressing estrus in market gilts. It can minimize the differences between gilts and barrows when it comes to weight gain, uniformity, carcass value and economics.

How does IMPROVEST work?

IMPROVEST is a new operational efficiency tool that can provide pork producers with an innovative solution to help address the Gilt Gap productivity issue.

"As gilts grow, the reproductive tract begins to develop," said Steve Pollmann, PhD and swine industry consultant. "Oftentimes, it's not observed until the gilt begins heat expression. However, several weeks prior, ovarian activity is being turned on, which initiates development of the reproductive tract which requires nutrients for growth."

IMPROVEST increases weight gain by its unique mode-of-action that turns off estrus expression and dramatically increases feed intake post second dose -- during a phase when consumption is starting to plateau in conventional market gilts -- enabling further growth," said Pollmann. "In the U.S, we commonly observe a fairly significant reduction (5–8 lbs) in market weights during the summer months, so a product such as IMPROVEST that can help minimize the summer weight reduction is really important to the industry."

Two-dose administration

IMPROVEST is administered using a two-dose injection, with the first dose given no earlier than nine weeks of age and the second dose given four to six weeks later. Zoetis provides an IMPROVEST administration certification and training program that includes recommendations to maximize outcomes.

Impact on weight gain, uniformity

“When estrus is suppressed in market gilts with IMPROVEST, studies have shown an improvement in average daily gain (ADG) during the grow-finish period of approximately 4% with 95% confidence intervals between 3.4% and 5.5%,” said Dr. Ben Bohrer, assistant professor of meat science and muscle biology at The Ohio State University.¹

No or very minimal impacts on feed conversion rate (FCR) are reported in research conducted with the product. The impact of IMPROVEST in market gilts for ADG results in about a 3% heavier carcass weight, with 95% confidence and ranges between 2.5% and 3.7%.

“The average carcass weight that we see in the United States was about 215 pounds in 2021, so a 3% improvement in carcass weight equals about 6.5 pounds of additional carcass weight,” Bohrer said. “Perhaps what's most interesting about IMPROVEST when it's administered to female pigs is the positive impact on population uniformity and the improvements in the percentage of heavier pigs marketed.”¹

IMPROVEST improves group uniformity by reducing sort losses and optimizing barn close-outs by consistently producing fewer lightweight, discounted pigs and culls and more pigs reaching the targeted weight range¹.

**INCREASED
ADG 4%**
DURING THE FINISHING PERIOD



**7 POUND
INCREASE
IN HCW**



**GREATER GROUP
UNIFORMITY
AND TARGET-WEIGHT
PIGS MARKETING**



Carcass impact on primal values

“To put it simply, IMPROVEST makes market gilts fatter when compared with conventional gilts,” said Bohrer. “The range of this increased level of back fatness is 2– 3 mm (1/10 inch).”²

The limited studies that have been conducted suggest there's a 0.1–0.25 percentage unit increase in the proportion of belly primal when expressed as a percentage of side weight.¹⁻⁵ However, the trimmed

lean primals appear to be affected to a lesser degree when comparing IMPROVEST female carcasses to conventional gilt carcasses.

Impact on meat quality

When estrus is suppressed in market gilts with IMPROVEST, fat quality is the component of meat quality that's affected to the highest degree. No differences have been reported for color, pH, or water-holding capacity of lean muscle when comparing IMPROVEST carcasses to conventional gilt carcasses, according to Bohrer. Iodine value (IV), which is an indication of fat firmness as well as oxidative stability of fat during prolonged periods of storage, is improved by 2–3 units (a reduction of 2–3 iodine value units) when market gilts are administered IMPROVEST.

“However, IMPROVEST has shown differences when compared with conventional gilts in fat quantity as well as fat quality,” he said. “As expected, based on the differences in back fat thickness, marbling has been shown to increase by about 0.25 percentage units or about $\frac{1}{4}$ of a subjective marbling score. Belly thickness has also been shown to be increased by 2–3 mm.”¹⁻⁵

“These differences in terms of fat quantity and fat quality are very similar to the comparisons that we would make between physically castrated barrows and conventional gilts, indicating that we are able to close the production gap between barrows and gilts,” he noted.

INCREASED
IMF 0.25%
GREATER MARBLING =
HIGHER PASS RATES



IMPROVED
FAT QUALITY
2 to 3
IODINE VALUE
UNIT REDUCTION



Expected ROI for independent producers and integrators

“The answer to this question depends on the economic priorities of a given operation,” said Bohrer.

Typically, independent producers look at the economics of new technologies using margin-over-feed costs. When comparing margin-over-feed cost with IMPROVEST gilts compared to conventional gilts, it's around a breakeven economic situation.

“However, these equations should also factor in the percentage of heavier weight pigs marketed. IMPROVEST has been shown to consistently provide meaningful advantages when compared with conventional gilts,” said Bohrer. “Another thing to factor in would be premiums that are offered on a grid-based system. There are several studies showing IMPROVEST gilts more consistently hit target weights compared to conventional production.”

IMPROVEST offers substantial advantages to the packer, especially when pork is being marketed on a quality-based system. Another consideration is the higher weights achieved with IMPROVEST, as well as more uniform carcass weight and improved carcass composition.

According to Zoetis’ ROI Simulator, IMPROVEST generates a net ROI for producers of \$2–\$3 per gilt when selling on a grid-based system and factoring in the improved percentage of heavier pigs marketed; and a net return for integrators of \$4–\$5 per gilt based on carcass and other product value and reduction in light/secondary marketed pigs.⁶



INTEGRATOR ROI
\$4–\$5/GILT
BASED ON CARCASS YIELDS AND
DISCOUNTED LIGHT-WEIGHT PIGS

PRODUCER ROI
\$2–\$3/GILT
BASED ON GRID-BASED SYSTEM



Impact on processing plants

“IMPROVEST should allow for greater throughput in processing plants and greater pass rates, both for domestic markets that are quality-based as well as premium export markets,” Bohrer said. “A 2021 study evaluating commercial pass rates for the loin primal concluded that a 22.3 percentage unit improvement in loin pass rates that factored in marbling, color and firmness was achieved with IMPROVEST gilt carcasses compared to conventional gilt carcasses.”

Another component that hasn't been studied quite to the same level of detail is improvement in terms of belly quality. However, based on the studies completed, Bohrer explained that the improvement of 2– 3 IV units for fat quality and 2– 3 mm of thicker backfat and belly thickness should improve belly quality, resulting in a greater proportion of premium bellies.

“There are also economic advantages for heavier primals and their impacts on fabrication economics, which would be very meaningful to a packer,” Bohrer said. “It’s important to share with your processor that you are using IMPROVEST. Transparency with your processor is always recommended, and the packer should see the benefit of IMPROVEST in gilts.”

Evaluating the industry impact of IMPROVEST

“IMPROVEST is a unique technology. It's truly a process from an implementation standpoint that requires a strong partnership, not only with a pharmaceutical company, but between a producer, their veterinary clinic, and the packer,” Bohrer said. “However, there are very few technologies that can be used in the pork industry right now that offer a 4% improvement in ADG without affecting FCR. There are even fewer technologies that show consistent improvements in terms of fat quantity as well as fat quality. I think the major benefit of IMPROVEST is the improvement that we would see in terms of carcass quality on a consistent basis.”

Pollmann says this is one of the most exciting technologies he’s seen in his 45-year career. “I say that because an obvious biological difference is being resolved in the way we manage gilts, and it really helps get that gilt where it performs more like a barrow which results in a huge increase in herd uniformity,” said Pollmann. “This provides producers and integrators with a more desirable product for the consumer. It’s a win-win.”

IMPROVEST is used worldwide, requires no withdrawal, and has no impact on meat export. To set up an on-farm validation demo, contact your Zoetis sales representative or to learn more about IMPROVEST for gilts, visit [builtforthe gilt.com](https://www.builtforthe gilt.com)

IMPORTANT SAFETY INFORMATION: Pregnant women should not administer IMPROVEST. Women of childbearing age should exercise extreme caution when administering this product. Exercise special care to prevent accidental self-injection because of negative effects on reproductive physiology in both men and women. However, there is no risk associated with consuming pork from animals administered this product. Do not use IMPROVEST in male pigs or gilts intended for breeding, or in barrows, cull boars or sows. See full Prescribing Information: <https://www.zoetisus.com/improvestpi>

About Zoetis

As the world's leading animal health company, Zoetis is driven by a singular purpose: to nurture our world and humankind by advancing care for animals. After 70 years innovating ways to predict, prevent, detect, and treat animal illness, Zoetis continues to stand by those raising and caring for animals worldwide – from livestock farmers to veterinarians and pet owners. The company's leading portfolio and pipeline of medicines, vaccines, diagnostics and technologies make a difference in over 100 countries. A Fortune 500 company, Zoetis generated revenue of \$7.8 billion in 2021 with approximately 12,100 employees. For more information, visit www.zoetis.com.

References

¹ Nautrup, BP, et al., Res Vet Sci, 2020

² Data on file. TI-05746: US OR 19PRGIMV-01-01

³ Data on file. TI-05793: US OR 19PRGIMV-01-02

⁴ Data on file. TI-06304: 21PPTIMV-01-01

⁵ Data on file. TI-06733: US OR 19PRGIMV-01-03

⁶ IMPROVEST Return on Investment Simulator

All trademarks are the property of Zoetis Services LLC or a related company or a licensor. © 2022 Zoetis Services LLC. All rights reserved. IMP-00148