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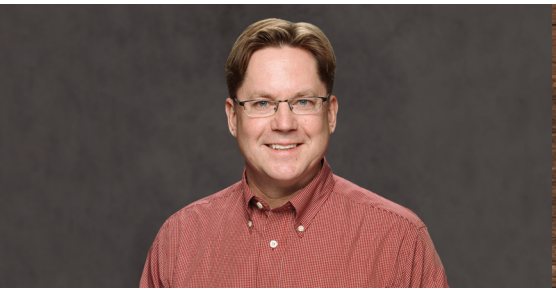
NEWS ABOUT PIG HEALTH PRODUCTS



An interview with
Daniel Nelson, PhD
Senior Swine Nutritionist
Zoetis

"Initially, producers who discontinue use of ractopamine will likely see reduced pig performance and carcass value. However, there are many ways to make up for the absence of ractopamine."

Tips for transitioning to ractopamine-free hog feed

Q: For nearly 20 years, ractopamine has been used by US pork and beef producers to improve carcass leanness and production efficiency. Recently, two major US pork companies announced that they would stop buying pigs that have been fed ractopamine. What's driving those decisions?

DN: Ractopamine has proved to be a safe and effective feed supplement used during the final 21 to 28 days of hog production to increase carcass leanness, feed efficiency and growth rate. It has a zero-day withdrawal time, which lets producers be flexible with marketing their hogs.

Pigs fed ractopamine generally show a marked improvement in loin depth and yield,[1] plus a 10% improvement in feed efficiency and growth rate during the period they are consuming ractopamine.[2] As a result, pigs get to market 5 to 6 days sooner than pigs that don't receive ractopamine. The feed additive has helped the pork industry improve carcass value.[3]

Q: Still, pork from pigs treated with ractopamine is not exportable to all markets.

DN: That's correct. Despite ractopamine's proven safety and advantages, some US export markets — most notably, China — do not import pork that's produced with ractopamine. The European Union issued a similar ban in 2014.

Today, with pork in short supply in Asia and parts of Europe following outbreaks of African swine fever, some US producers understandably want to have more flexibility with exports to meet this growing international demand.

Q: How does the recent decision by two major US pork companies to stop buying pigs treated with ractopamine impact producers who use the product?

DN: They have two options. They can either find other markets for their pigs or stop using the product. Initially, producers who discontinue use of ractopamine will likely see reduced pig performance and carcass value. However, there are many ways to make up for the absence of ractopamine.

continued

Ractopamine residues: Where to look at the feed mill

Charles Stark, PhD, professor of feed technology, Kansas State University, says the following feed-mill equipment could be potential sources for ractopamine residues:

- **White-grease tank**
- **Hand-add dump and area**
- **Microsystem (bins, tubs, hoppers, transfer drags)**
- **Mixer and surge**
- **Vents (from surge to mixer, mixer to scale)**
- **Drag conveyors and bucket elevators after the mixer**
- **Feed cleaners**
- **Distribution equipment for finished feed (e.g., conveyors)**
- **PPLA (post-pellet liquid application) system**
- **Finished-feed bins**
- **Load-out equipment**
- **Feed-truck compartments**

Q: Specifically, what do you suggest for closing the gap?

DN: For starters, we need to encourage producers to get back to the basics of good animal husbandry. Producing healthier pigs is the best way to fill the gap. Pork producers and veterinarians should start by focusing on individual pig care, helping pigs get off to a strong start and on feed as soon as they enter the nursery. Pay close attention to ileitis, *Mycoplasma hyopneumoniae* and porcine circovirus.

Q: Are there any production tools they can use in the finishing phase to optimize growth rate and feed efficiency?

DN: From a nutrition standpoint, making changes to diets — increasing the energy density or the amino acid concentration, for instance — may be considered.

Another option is BMD® (bacitracin methylenedisalicylate), which may be fed to pigs without a veterinary feed directive and has a zero-day withdrawal period, to increase weight gain and feed efficiency.

For some farms, immunocastration has proved to be a practical, effective strategy for harnessing the inherently faster growth rate and efficiency that naturally come with intact males.

Q: What should pork producers do if they've already started a group of pigs on ractopamine?

DN: Keep them on it. Once you've started feeding ractopamine, it's too late to market them as ractopamine-free. You'd also lose a considerable production advantage if you pulled the product. You're better off staying the course, feeding them out and then making plans to remove it for subsequent groups. You also need to take steps to make sure your sources of feed ingredients are ractopamine-free.

Q: Let's talk about that in more detail. Discontinuing the use of ractopamine may be easy from a production standpoint, but feed mills — the ones on farms, as well as co-ops and other commercial operations — reportedly need to take special precautions to ensure future batches of feed are completely ractopamine-free. Feed mills are accustomed to flushing their systems to avoid residues of antibiotics and other feed ingredients. Why does ractopamine create additional challenges?

DN: In 2012, the Codex Alimentarius Commission, a UN food standards-setting body, set maximum residue limits, or MRLs, for ractopamine hydrochloride of 10 parts per billion (ppb) for muscle cuts of pork and beef.[4] The US Food and Drug Administration's limit is 50 ppb for pork.[5] China and the EU, on the other hand, have a zero-tolerance policy.[6]

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On-farm recommendations

Steve Pollmann, PhD, a swine nutritionist at DSP Consulting, offers the following tips for transitioning farms off ractopamine, if necessary:

- **Finish what you started** — Discontinue use of ractopamine as soon as your production flow and/or product inventory allow, but continue feeding it to any groups of pigs that are already on it. That will ensure compliance with the product's usage guidelines while also protecting your investment in the technology.

- **Eliminate product inventory** — Once you've decided to stop using ractopamine, remove any unused product from the premises to avoid the risk of recontamination. Talk with your supplier about disposal options, if needed.

- **Leave nothing to chance** — A system may become ractopamine-negative over time without cleaning, but that could still result in sporadic and unpredictable positive tests over time. To play it safe, clean all feeding equipment, from the feed mill to the finisher. Ractopamine is water soluble, so water serves as a good, low-cost cleaning agent for most surfaces.

- **Avoid carryover between groups of pigs** — Make sure all on-farm feeding equipment has been vacuumed and washed thoroughly.

- **Don't assume** — Dilution goes a long way toward reducing ractopamine residues on the farm and in feed mills, but it's not absolute. Test kits are commercially available for testing pig feed and urine.

Editor's note: Dr. Pollmann is a paid consultant for Zoetis, but the opinions and advice presented here are his own.

Q: Practically speaking, what does zero tolerance mean? Do these markets have even lower MRLs?

DN: Zero tolerance means zero ractopamine. That's a big challenge because in packing plants ractopamine levels in internal organs can be measured in parts per *trillion*, versus parts per million or parts per billion for some other feed ingredients. Getting to zero is virtually impossible to achieve unless pigs have not had any contact — direct or indirect — with any feed produced in a mill where ractopamine was used as an ingredient.

Q: So, the feed mills need to be thoroughly flushed of ractopamine?

DN: Yes, but because we're talking about measuring ractopamine in parts per trillion, there's no wiggle room. Any mill that has handled ractopamine in the past will need to be thoroughly cleaned — not just the bins and the mixers, but also the legs, the spouts, conveyors, augers, cups, scoops, air filters and the load-out and transportation equipment. Even the animal-fat tank needs to be cleaned out because it might contain fat from pigs or cattle that were treated with ractopamine.

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Q: How long could it take to ensure a feed mill is ractopamine-free?

DN: That will vary with the mill's volume, structure and management. But realistically, when you consider all the moving parts of a feed mill and the ability to measure ractopamine in parts per trillion, it could take up to 6 months for a mill to completely remove ractopamine and ensure that pigs given ractopamine-free feeds don't test positive for it at the packing plant.

The good news is that ractopamine is water soluble, so it cleans up easily. You just need to get into every nook and cranny of your entire feed-manufacturing and transportation system.

Q: What is Zoetis doing to help feed mills with this transition?

DN: Besides offering technical assistance, our Customer Analytics Services laboratory in Chicago Heights, Illinois, provides free and unlimited assays for customers who have been using Engain® (ractopamine hydrochloride). Feed-mill managers should contact their Zoetis representative for more information about that unique service.

Ractopamine may increase the number of injured or fatigued pigs during marketing. Do not use in breeding swine. Refer to label for complete directions for use, precautions and warnings.

For more information, contact Daniel Nelson (daniel.nelson@zoetis.com) or your Zoetis representative.

[1] Boler DD, McKeith FK, Puls CL, et al. Effects of generic ractopamine (Engain) on the growth performance, carcass characteristics, meat quality, and cutability of finishing barrows and gilts. Profess Animal Sci. 2014;30(6):625-636.

[2] Apple JK, Rincker PJ, McKeith FK, Carr SN, Armstrong TA, Matzat PD. Review: Meta analysis of the ractopamine response in finishing swine. Profess Animal Sci. 2007;23:179-196.

[3] Gu Y, Schinckel AP, Forrest JC, Kuei CH, Watkins LE. Effects of ractopamine, genotype, and growth phase on finishing performance and carcass value in swine: II. Estimation of lean growth rate and lean feed efficiency. J Animal Sci. 1991 July;69(7):2694-2702.

[4] Codex adopts ractopamine limits for beef and pork. Food Safety News. July 6, 2012.

[5] Ibid.

[6] Ibid.

toolbox

Toolbox is a series of interviews with veterinarians about their experiences managing antimicrobials, vaccines and other tools for swine health. It is produced by the editors of *Pig Health Today*® on behalf of the US Pork Business of Zoetis.

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