



LSP Myth Buster #30

An ongoing Land Stewardship Project series on ag myths and ways of deflating them.

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Myth: Banning subtherapeutic use of antibiotics in livestock production will be an economic disaster for farmers.

Fact:

For more than half-a-century, antibiotics have played a major role in the production of livestock in this country. That drugs are used to treat sick animals is no big surprise. What the general public may not be aware of is that in hog operations, for example, low levels of antibiotics are key

ingredients in animal feed. This “subtherapeutic” use of antibiotics helps livestock deal with the stress of intense confinement, while boosting productivity. As a result, the U.S. Food and Drug Administration estimates that 80 percent of the antibiotics produced in the U.S. are used in the livestock industry.

Unfortunately, administering low dosages of drugs over an extended period of time provides the perfect environment for creating “super bacteria” that can’t be killed with regular dosages of antibiotics. Low dosages kill some but not all of the bacteria. The ones that survive do so for good reason: they have genetic mutations that make them resistant to the antibiotic. They can then go on to reproduce and exchange genes with other microbial resisters.

As *Scientific American* recently editorialized: “You could not design a better system for guaranteeing the spread of antibiotic resistance.”

That’s why health care professionals are calling for greater restrictions on the use of subtherapeutic dosages of antibiotics in livestock production. Numerous studies have shown a significant rise in the growth of antibiotic resistant bacteria in recent decades, an indication that over-use of pharmaceuticals is threatening to return us to the dark ages pre-penicillin, when people died from even the most basic infections. (It should be pointed out that humans are part of the problem as well—receiving antibiotics for treatment of a viral ailment such as the common cold, for example, is another way we create the perfect environment for spawning drug-resistant super-bugs.)

The industrialized livestock industry has resisted all attempts to ban or even significantly restrict subtherapeutic use of antibiotics, arguing that it would deal a crippling economic blow to farmers.

But one country’s experience with restricting drug use says otherwise. Since 1995, Denmark has imposed increasingly tighter restrictions on the use of antibiotics in the production of pigs, poultry and other livestock. Today, subtherapeutic use of antimicrobials in Danish livestock production is banned.

The result? A study of the Danish swine industry from 1992 to 2008 found that the post-subtherapeutic Danish pork industry is producing more pigs per sow, and the average daily gain of those pigs is higher. The mortality rates for weaning and finish-

ing pigs were similar in 1992 and 2008. Denmark remains the world’s leading exporter of pork.

These results suggest “that long-term swine productivity was not negatively impacted by a ban on [antimicrobial growth promoter] use,” concluded the study, which was published in the July 2010 issue of the *American Journal of Veterinary Research*.

A couple of caveats: First, there are indications that therapeutic use of drugs to treat sick animals has gone up in Denmark since the ban. But therapeutic use is much less likely to lead to super-bugs than subtherapeutic use. Denmark’s overall antibiotic use in all livestock production is still 40 percent lower than when the ban was initiated.

And there were some initial bumps along the way for Danish pork producers in making the transition to dropping subtherapeutics. For one thing, the average weight of newborn pigs fell at first, and mortality rates went up. But then farmers started making adjustments in their animal husbandry techniques. One change was to leave the sows and piglets together longer to bolster the litters’ immune systems naturally, and to give the pigs more room to move around. Some farmers also switched from the use of slatted floors to deep bedding made from straw and other dry material. This latter strategy helps manage waste as a relatively dry material rather than as liquid manure, creating a less stressful environment for the pigs.

The lesson is clear: there is a reason subtherapeutics are used in intensive confinement systems—they help animals deal with the rigors of being crowded onto concrete slatted floors over liquid manure pits. Production systems that allow animals to live in a more natural environment can help make the crutch of subtherapeutic antibiotics unnecessary.

→ More information:

- For more on the paper, “Changes in the use of antimicrobials and the effects on productivity of swine farms in Denmark,” see the July 2010 issue of the *American Journal of Veterinary Medicine* at www.ncbi.nlm.nih.gov/pubmed/20594073.

- The March 30, 2010, edition of *Scientific American* comments (“Our Big Pig Problem”) on Denmark’s experience with banning low-dosage microbials in livestock: www.scientificamerican.com/article.cfm?id=our-big-pig-problem.

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