

OHIO STATE UNIVERSITY EXTENSION



# OHIO VETERINARY NEWSLETTER

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Veterinary Extension

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## Research

Van Eenennaam, A. L., & Young, A. E. (2014). **Prevalence and impacts of genetically engineered feedstuffs on livestock populations.** *Journal of Animal Science*, 92(10), 4255-4278. doi: 10.2527/jas.2014-8124

**BACKGROUND:** Some states have considered legislation that would require mandatory genetically engineered (GE) labeling, and some food companies are actively targeted by campaigns to promote products from animals that are fed non-GE diets.

**PURPOSE:** The objective was to briefly review the literature on livestock GE feeding studies and the composition of animal products derived from animals fed a GE diet. They gave special attention to health studies of animals, including an analysis of publicly available data on the health of commercial livestock populations since the introduction of GE crops in 1996. Also, they summarized the global usage and trade of GE feedstuffs along with the estimated size of GE-sensitive markets. Finally, they discussed issues regarding pipeline and regulation of GE crops with modified output traits, asynchronous regulatory approvals, and novel breeding technologies.

**RESULTS:** Commercial livestock populations are the largest consumers of GE crops, and globally, billions of animals have been eating GE feed for almost two decades. An extensive search of peer-reviewed literature and field observations of animals fed diets containing GE crop products have revealed no unexpected perturbations or disturbing trends in animal performance or health indicators. Likewise, it is not possible to distinguish any differences in the nutritional profile of animal products following consumption of GE feed.

**CONCLUSIONS:** The availability of non-GE feedstuffs is limited and more expensive. There are second generation GE crops in the pipeline with improved output traits for livestock which will likely complicate the sourcing of non-GE feedstuffs. New techniques with precise genetic changes offer both tremendous opportunities and challenges for global regulatory oversight. The authors concluded that there is an urgent need for international harmonization of both regulatory frameworks for GE crops and governance of advanced breeding techniques to prevent widespread disruptions in international trade of livestock feedstuffs in the future.

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Nadimpalli, M., Rinsky, J. L., Wing, S., Hall, D., Stewart, J., Larsen, J.,

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Contact:  
Jeffrey D. Workman, PhD  
Extension Program Coord.  
[workman.45@osu.edu](mailto:workman.45@osu.edu)  
614-292-9453

<http://vet.osu.edu/extension>

...Heaney, C. D. (2014). **Persistence of livestock-associated antibiotic-resistant *Staphylococcus aureus* among industrial hog operation workers in North Carolina over 14 days.** *Occupational & Environmental Medicine*. Advance online publication. doi: 10.1136/oemed-2014-102095

**BACKGROUND:** Whether livestock-associated *S. aureus* can persistently colonize the noses of those occupationally exposed to livestock and poultry remains unclear. No published work has examined the persistence of carriage of livestock-associated *S. aureus*, including MRSA and MDRSA, among livestock workers in the USA.

**PURPOSE:** This purpose was to evaluate the persistence of nasal carriage of *Staphylococcus aureus*, methicillin-resistant *S. aureus* and multidrug-resistant *S. aureus* over 14 days of follow-up among industrial hog operation workers in North Carolina.

**RESULTS:** Twenty-two Hispanic workers between 25 and 44 years of age participated in the study. Eighty-six percent of the workers carried *S. aureus*, 5% carried MRSA, and 46% carried MDRSA during at least one sampling point of the 14-day follow-up. There were ten workers who were persistent and six were intermittent carriers of livestock-associated *S. aureus*. Six workers were persistent and three intermittent carriers of livestock-associated multidrug-resistant *S. aureus*. One worker persistently carried livestock-associated methicillin-resistant *S. aureus*. Six workers were non-carriers of livestock-associated *S. aureus*. Eighty-two percent of livestock-associated *S. aureus* demonstrated resistance to tetracycline.

**CONCLUSIONS:** The authors concluded that their findings indicate that nasal carriage of livestock associated *S. aureus*, including MRSA and MDRSA, can persist among industrial hog operation workers in the USA over a 14-day period, which included up to 96 hours away from work. These findings support the need for future surveillance studies of carriage persistence and infection dynamics among livestock workers in the USA.

### [ACCESS THE ARTICLE...](#)

Bosch, T., Verkade, E., van Luit, M., Landman, F., Kluytmans, J., & Schouls, L. M. (2014). **Transmission and persistence of livestock-associated MRSA among veterinarians and their household members.** *Applied Environmental Microbiology*. Advance online publication. doi:10.1128/AEM.02803-14

**BACKGROUND:** Previous techniques had limitations in characterizing livestock-associated MRSA (LA-MRSA). Recently, whole genome mapping (WGM), a new high-resolution typing technique for LA-MRSA was introduced. Using this method, epidemiologically unrelated LA-MRSA isolates that were previously indistinguishable by spa- and MLVA-typing, can now be differentiated. Furthermore, the method is able to identify transmission events between livestock veterinarians and their household showing its potential as typing tool for LA-MRSA.

**PURPOSE:** The purpose was to further investigate the potential of WGM to identify possible transmission of LA-MRSA between humans using isolates originating from a 2-year prospective longitudinal cohort study in which livestock veterinarians and their household members were repeatedly sampled for the presence of *S. aureus*.

**RESULTS:** This study included 135 Dutch livestock veterinarians and their household members. A considerable degree of genotypic variation amongst LA-MRSA strains was observed. However, there was very limited variability between the maps of the isolates originating from the same veterinarian, indicating that each of the veterinarians persistently carried or had re-acquired the same LA-MRSA. Comparison of WGMs revealed that LA-MRSA transmission had likely occurred within virtually every veterinarian household. Yet, only a single LA-MRSA strain per household appeared to be involved in transmission.

**CONCLUSIONS:** The authors concluded that LA-MRSA is genetically diverse and that this genetic variation can be used to characterize LA-MRSA strains. Also, carriage of LA-MRSA in veterinarians and their household members can be persistent, lasting up to 14

months. Furthermore, this study demonstrates that transmission of LA-MRSA between veterinarians and their household members does occur, posing a potential risk for spread of this highly resistant pathogen in the community.

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## Calendar



A full calendar of all upcoming events and continuing education opportunities offered by the College of Veterinary Medicine is available on the website at <http://vet.osu.edu/>

### Ohio Dairy Health and Management Certificate Program

Module 3 – Basic Dairy Cattle Nutrition  
December 4-6, 2014

Module 4 – Advanced Dairy Cattle Nutrition  
March, 2015 (TBD)

Modules 3 and 4 of this cohort will be focused on nutrition. Space is still available under the specific-module option.

### Organic Livestock and Poultry Health Series

Webinar – Internal Parasite Management in Pasture-Based Sheep and Goat Operations  
Monday, November 3, 2014 at 1:00 p.m.

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The *Ohio Veterinary Newsletter* began in October of 1974 as a way for Veterinary Extension to relay relevant information to practicing veterinarians in Ohio. The aim is to communicate pertinent news from the Veterinary Extension Unit; unbiased, research-based information with practical relevance for veterinary practitioners working in food animal, equine, and shelter medicine; and a calendar of upcoming opportunities. Please feel free to provide your feedback and let us know what information is most helpful to you and your practice.

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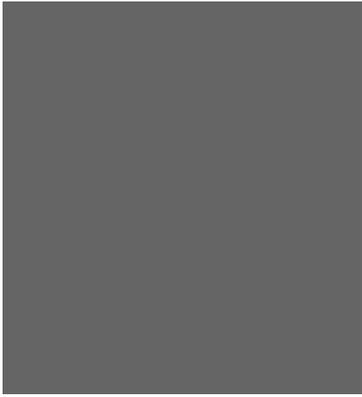
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*Keith L. Smith, Associate Vice President for Agricultural Administration; Associate Dean, College of Food, Agricultural, and Environmental Sciences; Director, Ohio State University Extension and Gist Chair in Extension Education and Leadership.*

*TDD No. 800-589-8292 (Ohio only) or 614-292-1868.*

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