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Quality assurance – Awareness by making all on the farm aware of what's in the feed and water

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Introduction

In a presentation at the 2011 Michgian Pork Producers Symposium, entitled *Feed Quality Assurance: Should Standard Operating Procedures (SOP) for on-farm feed manufacturing be developed and implemented?* I made the statement that contract growers and all farm animal caretakers should be aware of every time there is a pharmacologic in the feed and (or) water. I was convinced then, and with the growing trend in Food and Drug Administration (FDA)-led and industry accountability, I am further convinced of its importance.

Since 2011, we've learned more about residues, impacts upon humans, and antibiotic resistance. The Food Safety Modernization Act's (FSMA, 2011) preventive control provisions for animal feed were released by the FDA in September of 2015, establishing the requirements for current good manufacturing practice, hazard analysis, and risk-based preventive controls for feed. The FDA manages safety of animal feed under its Animal Feed Safety System (AFSS) and states that "the AFSS includes regulations and guidance pertaining to the...

- manufacture
- labeling
- storage
- distribution and
- use

...of all feed at all stages of production and use, whether at commercial or non-commercial feed manufacturing establishments, farms where animals are raised, or homes where pet animals are kept." Within this system, the FDA regulates the Veterinary Feed Directive which went into full effect on January 1, 2017. We've updated the Michigan Commercial Feed Law (P.A. 120 of 1975, as amended 2015). Lastly, we've engaged in the Common Swine Industry Audit verifying "that a pork production site is in compliance with established standards for swine care and pre-harvest pork safety" (National Pork Board, 2018). Without a doubt, accountability by government, by food distributors, by packers, by our fellow citizens, and by countries importing our pork, is being increasingly passed onto the farmer.

Under the *We Care* Principles and within the Common Swine Industry Audit (CSIA), best management practices (BMP) are developed to protect everyone in the pork food chain and provide pork that is safe and nutritious, including through awareness and observation at ground zero -- the farmers and on-farm stockpersons.

Reasoning

So how is it implied in federal and state regulations and guidance that all animal caretakers be aware of pharmaceuticals provided to pigs on the farm?

To reiterate, FDA-AFSS's stated purpose is to regulate and guide the manufacture, labeling, storage, distribution and use of all feed at all stages of production - it is not doing so. Clearly, commercial feed plants are subject to the FSMA Preventive Controls for Animal Food rule. FDA has responsibility for enforcement of the FSMA Preventive Controls for Animal Food rule. Use of Current Good Management Practices (CGMPs) are for commercial feed mills under this rule (FDA - CFR 21CFR225.1). Every feed delivery to the farm or farms (including those under contract) must be delivered with the correct paperwork (lot number, ingredient description, drug concentrations, directions for feeding, and caution statements). Record keeping must be adequate to facilitate the recall of specific batches of medicated feed that have been distributed and retained on the premises for one year following the date of last distribution. While commercial manufacturers of medicated feed must follow Current Good Management Practices (FDA - CFR 21CFR225.1), feed mills that are part of individual farms and integrated farming systems are currently not subject to the FSMA Preventive Controls for Animal Food rule. These farms and have been excluded from the enforcement of the FSMA Preventive Controls for Animal Food rule for now. However, FDA mentions that it does have plans to include them, at least with Guidance information in the future. At a state level, the amended Michigan Commercial Feed Law (2015) has similar content regarding CGMPs in commercial feed manufacturing and distribution. The state law also does not pertain to individual farms and integrated farming systems.

Farms are required by law (21 CFR part 558 subpart B) to use medicated feed in accordance with its approved uses by following product labeling regarding intended animals, indications for use, all precautions and instructions on how to handle, store, and use the feed, and limitations for use and withdrawal times. Nonbinding recommendations are provided by the FDA in their Guidance for Industry #203 entitled "Ensuring Safety of Animal Feed Maintained and Fed On-Farm." Released in March of 2015, the guidance is given to help persons who feed animals develop and implement on-farm practices to ensure the safety of animal feed. In this document 'persons who feed animals' are encouraged to store, distribute, and use feed, to observe biosecurity measures to prevent or significantly minimize the introduction of contaminants, and to read and follow labeling for use, storage, and disposal of all pesticides, fertilizers, and other agricultural chemicals.

These laws and recommendations suggest that it may be prudent to think in terms of an effective residue avoidance program for the entire pork production system. It may be wise to make sure those records are kept at each production site where pigs are fed. It seems that there would be wisdom in informing the animal caretakers about food and water treatments for pigs so that they can help minimize the unintended cross-contamination.

Stronger support for making notification of contract growers and all farm employees that care for pigs about feed and water treatments is apparent in the questions

asked in the Common Swine Industry Audit (2018). These question imply that all animal caretakers should be aware of animal treatments, protocols for treatment, and records of treatment. Although the term contract grower is not stated explicitly, their responsibilities for caring for the animals is undeniable. Below are the most relative questions:

36. Can caretakers articulate their method for tracking what treatments have been administered and how long each animal has been receiving treatment?

38. Are caretakers able to articulate the training they received specific to their daily duties?

57. Does the site have documentation of annual caretaker training specific to their daily duties?

65. Does the site have a written SOP for feeding and watering protocols?

67. Does the site have a written SOP for caretaker training?

68. Does the site have a written SOP for treatment management?

86. Are medication and treatment records retained for 12 months?

One final reason supporting greater awareness of pharmaceutical and chemical use on the farm is that it will provide direct protection of all people that work with the animals. The Occupational Safety and Health Administration requires that workers must be provided protection and that would include protection from feed dust which may contain antimicrobials.

Decision

My encouragement is that standard operating procedures for on-farm notification of pharmaceutical and chemical use should be developed and implemented throughout the pork production operation including all sites and all animal caretakers in the multiple-site system. I would suspect that there are few farms that have these standard operating procedures. Each farm will have to write specific statements describing "how to do each step". The implementation of directive and specific standard operating procedures will enhance food safety, increase consumer confidence in pork, protect employees, and enhance the long-term profitability of the pork production enterprise.

References (available upon request)

Transport of Pigs in Spring and Summer Months

By Scott A. Kramer, Michigan State University Large Animal Clinical Sciences, Guest Columnist

MSU Extension Swine Veterinarian: Madonna Benjamin

As the warmer months approach, it is important to review transport conditions of pigs in spring and summer months particularly to educe "in-transit loss". Haley et al. (2008) define "in-transit loss" as a term to describe pig loss during transport from farm to slaughterhouse, also known as an abattoir, it is also important to remember that while we tend to focus on transport of market pigs (including culls); weaners and feeders are also at risk (1,2). American Association of Swine Veterinarians President Dr. Ron Brodersen stated that the United States produced approximately 120 million market pigs in 2015 which equated to approximately 1 million pigs on the road every day- that's a lot of pigs (3). While the actual percentage of pigs lost during transport is less than 1 percent; this does not discount the fact that poor transportation can have adverse effects on the welfare of pigs, leading to significant loss of quality and result in a negative financial impact on producers (4,5,6). Notably, a greater percentage of "in-transit loss" is believed to be due to shipping pigs under environmentally adverse conditions and was determined to reach a peak during the summer

months (4,7,8).

Today the National Pork Board's Transport Quality Assurance™ (TQA™) program is recognized as the swine industry's best practices for handling and transportation. The program was designed to help swine producers, transporters, and handlers understand the best practices for not only handling, moving and transporting pigs but also in understanding the impacts their actions may have on pig welfare and pork quality (9). The latest version of the TQA™ program is available on the National Pork Board's web-page in English and Spanish (9). The manual contains valuable information regarding transportation in extreme weather conditions. Particularly relevant is the Livestock Hot Weather Safety Index presented in Chapter 4 of the manual. The index is provided graphically allowing the user to find the intersection of humidity percentage and outdoor temperature as it relates to distinct hazard levels including SAFE, ALERT, DANGER, and EMERGENCY (Figure 1, at left) (9,10).

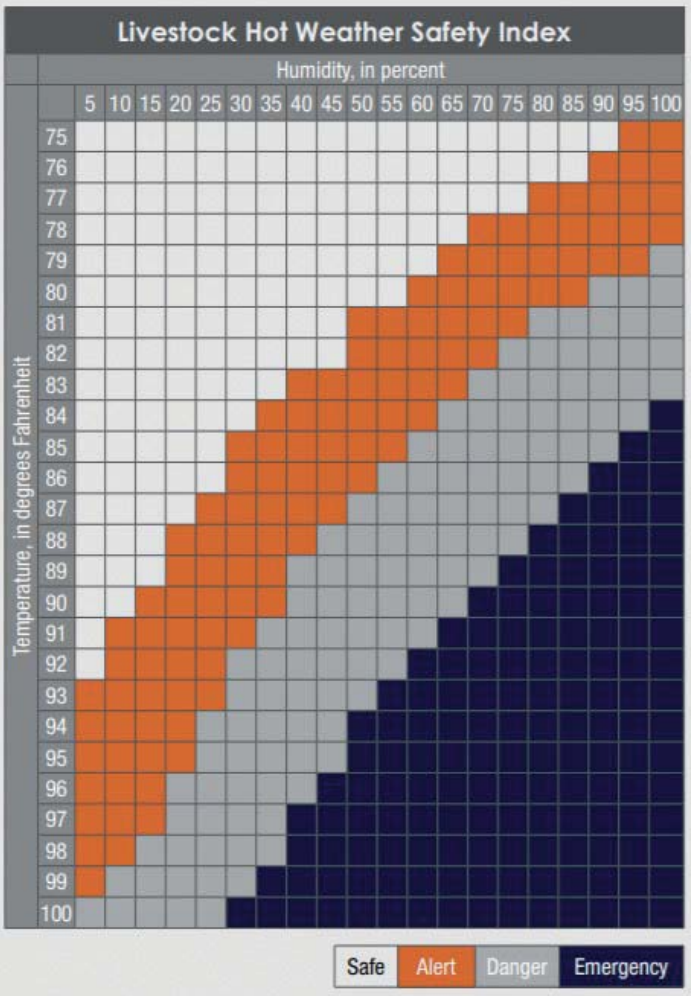

Figure 1: The Livestock Hot Weather Safety Index can be found in the current TQA™ manual v.6 (9). This image graphically plots outdoor humidity and temperature to illustrate distinct hazard levels to pigs in transport.

Hazard Level: Suggested Actions

Alert Level: Deliver by late morning

Danger Level: Haul hogs at night

Emergency Level: Avoid hottest parts of the day

Some Other Factors to Consider May Include:

Distance to Travel:

- Consider scheduling loading and transporting in cooler weather conditions like early morning or evening for pigs being shipped longer distances.

Loading Density:

- Over stocking livestock trailers increases stress and death loss of pigs (11,12).

Grandin (2014) suggests increasing space allowances 15 to 20% in warmer conditions and allowing pigs sufficient area to lie down on longer trips (13).

Recommended truck space allowances are presented in Table 1 (page 5) (14).

The type of trailer used to transport pigs may also influence pig losses as the environment of distinct compartments may be more susceptible to extreme weather conditions (15,16) (Figure 2, page 5).

- You may consider pre-sorting pigs, weighing and stocking individual pens in the barn the day prior to loading so that each pen represents a truck compartment on the day of loading. This will dramatically reduce stress of both employees and pigs on the day of loading (17).

Size of Pig:

- Be sure to respect the size of pig that the establishment accepts prior to shipping.
- Most abattoirs tend to handle more uniform

market weight pigs appropriate for the scale of their equipment.

- Younger pigs not transported to an abattoir; weaned pigs typically have higher mortality rates than feeder pigs, especially under warm/hot conditions (18).

Compromised Animals:

- While it is the transporter's responsibility to protect pigs during all weather conditions, responsible producers should not load pigs unfit for transport (9). Dead and non-ambulatory disabled pigs at the packing plants cost the U.S. swine industry approximately 46 million dollars annually (17).

The fitness of pigs intended for transport should be assessed prior to loading (18, 19).

Pigs which are compromised or unfit for transport should not be loaded and either treated or humanely euthanized.

Keeping Pigs Cool:

- Considering the fact that pigs lack effective sweat glands, they are inherently challenged to manage body temperature (21).
- Wide variations in temperature and relative humidity are major factors affecting stress and

Small Pigs				Market Swine		Winter (cold weather)		Summer (hot weather)	
Weight Kg	Lbs.	m^2	ft^2	Weight Kg	Lbs.	m^2	ft^2	m^2	ft^2
4.54	10	0.06	0.70	45	100	0.22	2.4	0.30	3.0
9.07	20	0.084	0.90	91	200	0.32	3.5	0.37	4.0
13.60	30	0.093	1.00	114	250	0.40	4.3	0.46	5.0
22.70	50	0.139	1.50	136	300	0.46	5.0	0.55	6.0
31.20	70	0.167	1.80	182	400	0.61	6.6	0.65	7.0
36.30	80	0.177	1.90						
40.80	90	0.195	2.10						

Table 1: Recommended Space Allowances on Trucks

The Federation of Animal Science Societies (FASS) has published a table of Recommended Space Allowances on Trucks for variable weight and season (14). The table provides an easy method calculating the stocking density of a particular compartment as a function of pigs/square foot or meter.

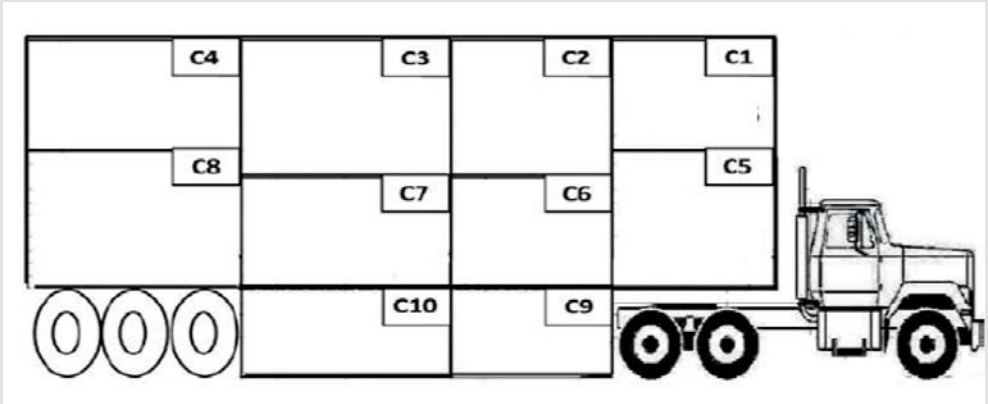

Figure 2: Trailer

The type of trailer and weather conditions may affect pig welfare. The compartments labeled C1, C4, C5 and C10 have been reported to have the most negative influence on pig welfare and pork quality. Sommavilla (2017) reported that temperature was typically higher in C10 during the summer. Similarly, relative humidity was also higher in C1 and C4 in summer (16).

welfare of pigs during transport (21).

- It's advisable to practice low-stress handling techniques to reduce excitement at loading and unloading to take advantage of behavioral principles including flight zone and point of balance (22-25).
- "Wet" pigs to cool them although not in excessively as too much water may increase humidity in the trailer (26).
- Have a contingency plan in the event that transportation is delayed (27).

Ensuring the safety and welfare of pigs in transport during the warmer spring and summer months is our duty as responsible swine producers and is essential in preventing unnecessary losses. Strategies to reduce pig loss are, not surprisingly, multi-factorial and may include consideration of weather conditions, time of day, distance traveled, stocking density as well as fitness of pigs for transport. Thoughtful consideration of the strategies presented may improve pig welfare, pork quality and have a positive financial impact for producers.

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Take Care of Humans in the "Hog Days of Summer!"

Guest Author - Kristine Ranger, Agri-food Systems Consultant

As farmers, we understand the extra efforts required to keep our animals content in hot and cold weather conditions, but sometimes we overlook the same needs for ourselves. According to the Centers for Disease Control and Prevention, farmworkers die from heat-related illness at a rate 20 times greater than that of the entire U.S. civilian workforce. Yet, with appropriate steps, heat-related illness is preventable, and fatalities are easily avoided.

Under Occupational Safety and Health Association(OSHA) law, employers are responsible for providing workplaces free of known safety hazards. This includes protecting workers from extreme heat. An employer with workers exposed to high temperatures should establish a complete heat illness prevention program that includes:

- Providing workers with water, rest and shade. At the minimum, employees should be allowed one 15-minute break for each four hours worked, plus a half hour lunch break after five hours of work. This rest is especially important when working long hours without shade.
- Allowing new or returning workers to gradually increase workloads and take more frequent breaks as they build a tolerance for working in the heat.
- A plan for emergencies and for training workers on prevention.
- Monitoring workers for signs of illness.

Additionally, you may want to consider cultivating a culture of safety. Clearly communicate to your family and employees that their safety is important to the overall success of the farm. Safety concerns include taking extra precautions in extreme heat to keep all people productive and comfortable. If your employees aren't bringing water bottles to work, have some readily accessible or ensure that they have access to a water source and have permission to replenish as necessary.

You may want to save the information in the table on the next page to ensure that everyone is aware of heat emergencies and is watching for signs of over exertion, which includes heat rash.

Water, rest and shade can prevent many emergencies, for more information, visit https://www.osha.gov/SLTC/heatstress/heat_illnesses.html. Communicate your concern for the safety and well-being of all staff by provide resources for prevention, and adjusting schedules when possible to avoid the heat this summer.

Hog Days of summer festival in Kewanee, Illinois

For more information, call Kristine at 517.974.5697. Emails inquiries are also welcome at kristine@knowledgenavigators.com.

Editor's Note: Kristine Ranger is a lifelong educator and advocate for agriculture. She has degrees in Animal Husbandry and A.N.R.E. from Michigan State University and a Masters in Adult Education from South Dakota State University. While at MSU, she worked at the MSU Swine Barns and has delivered lessons in classrooms, board rooms, arenas, and barns for over 27 years. She consults with farm owners to increase their leadership, team and organizational effectiveness.

	Heat Rash	Heat Cramps	Heat Exhaustion	Heat Stroke
Symptoms	Red or pink rash found on body areas covered by clothing. A fine, bumpy, itchy rash, skin burning, and a "prickly" feeling, thus also known as prickly heat.	Muscle pain and tightness, especially in the elderly, small children, overweight people, or those who have been drinking alcohol.	Heavy sweating, accompanied by cold, clammy skin. Fast, weak pulse. Nausea or vomiting. Muscle cramps. Tired/weakness. Dizziness. Headache Pale/flushed face. Muscle cramps.	All the symptoms of heat exhaustion, plus: Body temperature over 104°F, confusion, irrational behavior or hallucinations, rapid, shallow breathing, seizures or loss of consciousness, and dry skin.
Cause	Skin irritation caused by sweat that does not evaporate from the skin. Friction on the surface of the skin	Loss of body salts and fluid during sweating.	Too much physical activity in hot weather when the body cannot cool itself adequately. Being confined or trapped in a place that heats up. Dehydration with water loss from excessive sweating	
Treatment	Apply a small amount of talcum powder or corn starch to the affected areas. Keep apple cider vinegar, hydrocortisone cream, or an antihistamine like Benadryl on hand for the itch. Avoid greasy ointments.	Rehydrate with water or Tonic Water, which contains Quinine. .	Stop the activity and allow the affected person to rest in a cool place, get in front of a fan, into an air-conditioned building or to shade. Drink cool fluids (water or sports drinks only). Loosen clothing and cool worker with cold compresses/ice packs. Take to clinic or emergency room for medical evaluation or treatment if signs or symptoms worsen or do not improve within 60 minutes. Do not require worker to return to work that day.	Call 911. This is a life-threatening condition and emergency medical attention is needed immediately. While waiting for help, place worker in shady, cool area, remove unnecessary clothing, Blow fan air on worker; place cold packs in armpits, wet worker with cool water or apply ice packs, if available Provide fluids (preferably water) as soon as possible. Stay with worker until help arrives.

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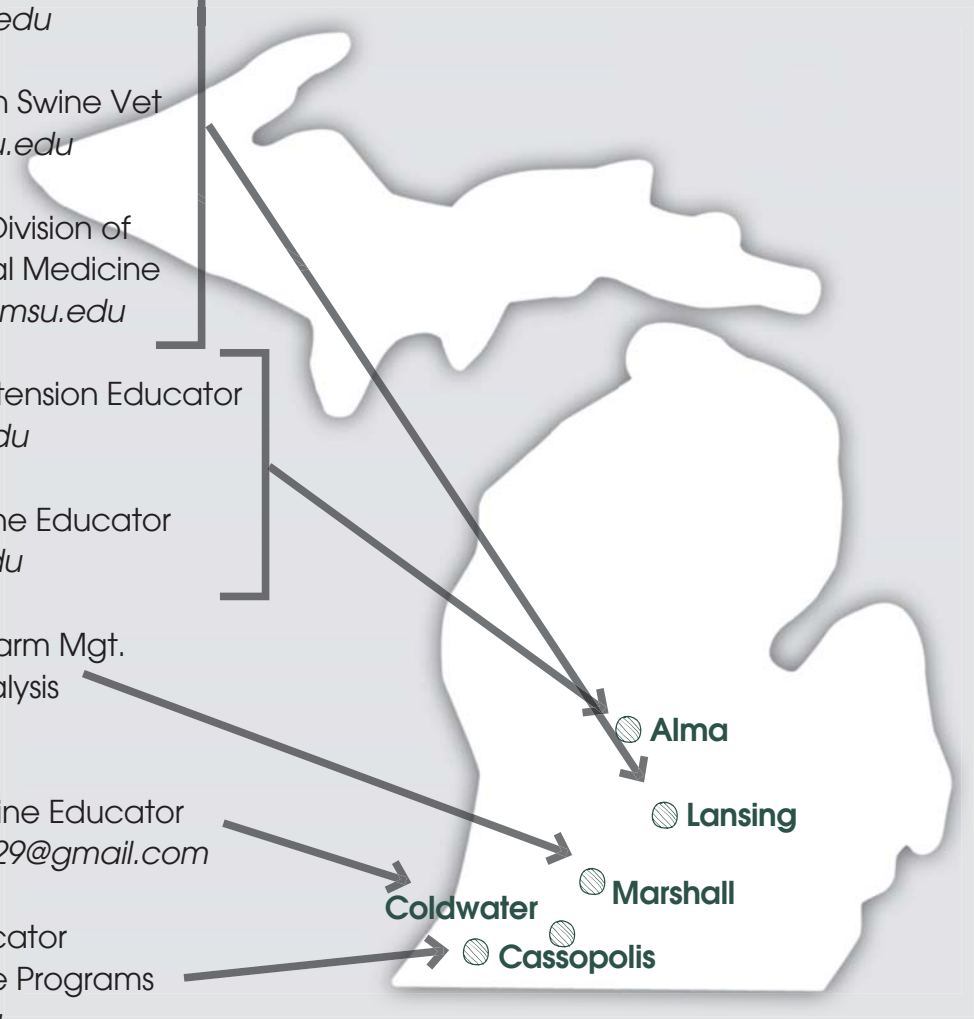

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