Sponsors

University of Minnesota
College of Veterinary Medicine

College of Agricultural, Food and Environmental Sciences

Extension Service

Swine Center

Editors
W. Christopher Scruton
Stephen Claas

Layout
David Brown

Logo Design
Ruth Cronje, and Jan Swanson;
based on the original design by Dr. Robert Dunlop

Cover Design
Sarah Summerbell

Epidemiology of gastroesophageal ulcers

John Deen, DVM, PhD
University of Minnesota

Gastroesophageal ulcers are a major concern in most grow/finish systems as the primary outcome of ulcers is death. They can also cause pale, slow-growing pigs, and, in some cases, heal and result in strictures. The ulcers reported in the 1960s were related to poor milling practices. It appears that there has been a resurgence of the problem in the 1990s, and ulcers are a significant part of the mortality reported in grow/finish barns. Mortality has also been reported in nurseries and in sows but at a much lower level.

A high proportion of mortality has been attributed to gastroesophageal ulcers, especially during the summer. These mortalities are usually characterized by pigs in good condition, but very pale at death (a condition called "bleach-out"). **Figure 1** shows a comparison of the distribution of total mortality and bleach-outs across a group of 103 groups in North Carolina. Overall bleach-out rates across the latter half of the year were monitored and the mortality rates due to bleach-outs was 3.4%. Many farms do not have a significant bleach-out rate, but some have rates that are quite high.

In this data set, the bleach-outs track the overall mortality rate quite closely as a function of time. **Figure 2** shows the relative proportions. However, the proportion of mortality due to bleach-outs does vary over time. **Figure 3** shows that it peaks in September closeouts and is significantly lower in June and December closeouts. Little bleach-out mortality is seen during the Jan-June closeouts.

On an overall rate, mortality per 1000-pig inventory per week placed peaked in September, as shown in **Figure 4**. This peak is a substantial problem that is difficult to characterize with respect to cause. Additionally, there is a significant problem with case definition in some herds. Within a herd there is usually a clustering of the mortality due to ulcers, which may not be exactly like the pro-

Figure 1: Distribution of mortality rates among farms

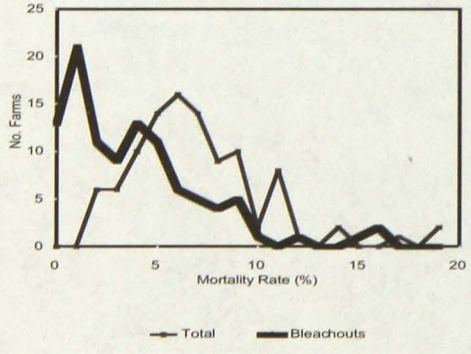


Figure 2: Proportion of mortality over days on feed

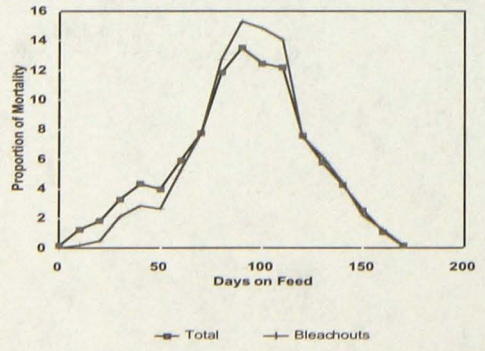


Figure 3: Distribution of mortality over time

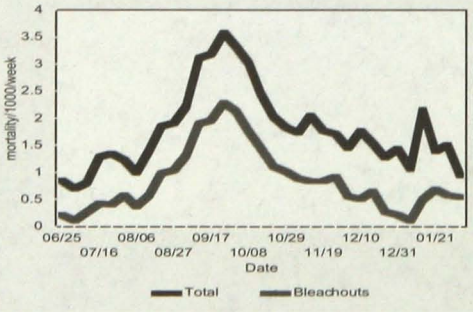
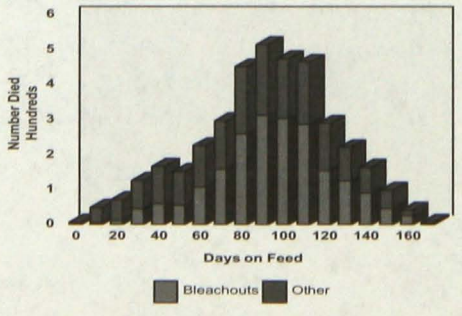


Figure 4: Distribution of mortality by days on feed



file shown in **Figure 2**. Instead, different groups react other ways. In some herds there is a chronic bleach-out problem that may not be related to the existence of ulcers.

Initiating factors are more difficult to define. In one study of 68 closeout groups, we found that running out of feed increased the level of mortality in the following week by 29% (p=.06). Additionally, the humidex level was positively correlated with mortality rates and may explain the seasonality. Mixing was not found to have a significant effect, but barrows had a much higher rate of mortality, increasing by 40% (p=.01).

To get to a good mechanistic description of the problem, the following variables should be monitored and recorded:

- The accuracy of bleach-outs as a measure of mortality due to ulcers
- The level of mortality rates and bleach-out rates
- The timing of ulcer outbreaks, with respect to both days on feed and season
- The timing of potential instigating factors, which include respiratory disease, feed and water shortages, and other stressors such as mixing

Such analyses will give greater understanding of the breadth of the problem and interventions can be followed more closely.