

Does feeding cattle distillers grains in rations increase *E. coli* O157:H7.

Terry Klopfenstein, Dave Smith, Galen Erickson and Rod Moxley

The first large ground beef recall was in 1997 by Hudson Foods. Since then *E. coli* O157:H7 has been a major food safety concern for the cattle industry. This organism is a mutation of the common coliform, *E. coli*. It has no apparent effect on cattle with possible exception of very young calves. The *E. coli* O157:H7 should not be confused with the *E. coli* that cause scours in calves and pigs. While *E. coli* O157:H7 does not effect feedlot cattle, it has a very detrimental effect on humans, especially the very young and old. It causes diarrhea, kidney failure and may cause death. The *E. coli* O157:H7 is found in most if not all feedlots and most lots of cattle entering the packing plants have some percentage of the cattle positive for *E. coli* O157:H7 on the hides. Contamination of the carcass occurs through inadvertent contact of the hide with the carcass. Because ground beef is trimmings, it has the greatest chance of being contaminated. The packing industry has spent millions on equipment and other measures to reduce *E. coli* O157:H7 in ground beef and they have done a good job. Until 2007 the number of recalls and positive tests for *E. coli* O157:H7 had declined markedly since 1997. Some progress has been made on preharvest interventions that will further aid in reducing the prevalence of *E. coli* O157:H7 in cattle entering slaughter plants and therefore allow the plants to further reduce the number of positive ground beef samples. The interventions are vaccinations, direct fed microbials, antibiotics and certain chemicals fed to the cattle. Only the direct fed microbial has been commercialized. In 2007, the number of recalls due to *E. coli* O157:H7 increased. At the same time, the production of distillers grains was increasing and the feeding of distillers grains to feedlot cattle was increasing. Some have implied a cause and effect relationship. In the fall of 2007, research connecting distillers grains feeding to *E. coli* O157:H7 was reported. There are published reports of other feedstuffs causing increased prevalence of *E. coli* O157:H7 in feedlot cattle. It is not at clear what the mechanism might be but it is logical that undigested feed may influence positively or negatively the growth of *E. coli* O157:H7 in the large intestine which is the primary site of colonization. Published data on the effect of distillers grains feeding or shedding of *E. coli* are not consistent within trials or across trials. For example, Nebraska research shows a decline in *E. coli* O157:H7 shedding with feeding 10 to 30% wet distillers grains and an increase at 40 and 50%. None of these was statistically different from the control diet with no distillers grains, but the highest level of distillers feeding was different from the lower levels. An explanation has currently escaped us. The lack of consistent results across and within trials could be due to: highly variable shedding of *E. coli* O157:H7; type of grain fed (dry rolled versus steam flaked); level of distillers grains fed; type of distillers grains fed (wet vs dry); overall level of *E. coli* O157:H7 shedding (ranges from zero to 80% of cattle shedding at one time); time of year; and sampling and measurement techniques. It is not clear whether feeding distillers grains increases *E. coli* O157:H7 shedding. There is certainly not a food safety crisis due to distillers grains feeding! Developing effective, economical and easily applied interventions is much more important than focusing on specific feeds.