



# Does Diatomaceous Earth Have a Role in Worm Control?

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Diatomaceous earth (DE) [IMAGE] is the fossilized, skeletal remains of algae mined from the earth in large quantities. It contains mostly silicon dioxide (like sand), with 10-16% other minerals that depend on the source. It is mined, dried, and ground into a powder then used for or in many things such as concrete, ceramics, and bricks, as fillers and thickening agents, fertilizers, pesticides, ointments, as abrasive and as pest control in stored grains. The location of the mine (in the world) and even the area within the mine itself can result in physical differences in DE which has then been found to alter its effectiveness for various uses.



Image by S. Schoenian

The U.S. Food and Drug Administration (FDA) lists DE as generally recognized as safe, when used as an inert carrier or anti-caking agent in animal feeds at no more than 2% with specific content guidelines, but it is NOT regulated by the FDA as a feed supplement, so care should be taken when using those types of products.

## Review of Research

In the mid-1990s, Iowa State University provided a pelleted diet with or without 5 or 10% DE to weanling lambs on pasture for 117 days for two years. No differences were found for weight gain or fecal egg counts or abomasal worm counts. During the same period and with similar results, another group of researchers compared DE and dewormer-treated sheep over a period of 4 months and found that those fed DE and not treated with dewormers had higher fecal egg counts and severely depressed weight gains, prompting the authors to conclude that not only did DE not provide control of gastrointestinal nematodes, but it could be detrimental to the animal.

Similar comparisons of dewormed or steers fed DE over 46 days when entering a feedlot also found that DE fed steers had higher fecal egg counts had to be fed longer to finish out than treated animals.

Research with DE in sheep and cattle was presented at the First Scientific Conference of the International Society of Organic Agriculture Research in Australia. In these studies, a very specific type of DE with an exceptional high surface area and oil absorption capacity was used with pregnant (then lactating ewes) compared to dewormed or untreated ewes on pasture. Fecal egg counts were not impacted by treatment, and body weights for lambs from DE fed ewes were similar to that of lambs from untreated ewes. With similar treatment groups, yearling Welsh black heifers also showed no overall benefit of DE administration over a 10 week period. This project overall supports previous study results of no realistic effect of DE when used in sheep or cattle.

In a more recent study in 2013, sheep fed diets with or without 2% DE had similar fecal egg counts and



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unconvincing larvae per gram of feces data. A farmer in Minnesota feeding DE reported mixed results with sheep. Although he did not collect any data, his observations seemed to support positive effects the first two years with lambs and heifers, but felt he should have used dewormers with the DE the last year.

Although there is a lack of convincing evidence for positive effects of DE for sheep or cattle, there have been reports of vague positive effects of DE in goats, though the researchers noted in personal communication the certain failure of the product to influence internal parasites in previous studies (unpublished).

Seventy-nine pregnant and lactating does on pasture were untreated, dewormed or fed DE at 2.5% of the diet. Because the dewormer used was not really effective in removing worms, the treated and DE-fed animals had similar fecal egg counts and measures of anemia. In a pen-fed study by the same researcher with or without DE at 5% of the ration, DE fed animals had lower fecal egg count but the number of does used, total length of the trail, timing of treatment relative to infection and initial level of fecal egg

counts was not provided or was not clear, so the results remain open to question.

When given as a drench (compared to water alone) over an 8-day period, Spanish and Spanish/Boer crossbred goats had similar fecal egg counts, body weight, and indicators of anemia.

Although diatomaceous earth has been shown with certainty to have insecticidal properties, information about the use of this product for gastrointestinal nematode control is sparse and unconvincing. The majority of controlled studies with published results including sheep, goats, and cattle have noted no significant impact of diatomaceous earth products on gastrointestinal nematode infection indicators. However, DE does contain trace minerals that may be of use to animals with deficiencies as a supplement, though that has not been proven with research. However, this may be the reason many users feel there is a visual health benefit of using DE and could explain the continued popularity of this product.



*Timely Topics were written by members of the American Consortium for Small Ruminant Parasite Control. They are for educational and informational purposes only. They are not meant as a substitute for professional advice from a veterinarian or other animal science professionals. Some treatments described in the articles may require extra label drug use, which requires a valid veterinarian-client-patient relationship.*