

***Dictyocaulus viviparus* - INTERPRETATION GUIDE**

Could lungworm be behind the cough?

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Dictyocaulus viviparus is a lung nematode (roundworm) that primarily infects cattle. Adult parasites reside specifically in the animal's trachea and bronchi. Its life cycle is direct: adult worms lay eggs that hatch rapidly in the airways. The first-stage larvae (L1) that are released travel up the trachea through coughing, are swallowed, and are then shed into the environment in manure. After developing into infective third-stage larvae (L3) on pasture, they are ingested by cattle. These larvae then actively migrate through the intestinal wall, pass through the lymph nodes, and use the vascular system to reach the lung parenchyma and establish themselves in the airways, where they complete their development.

The pathogenicity of *D. viviparus* varies with parasite burden, the developmental stage of the parasite, and the host's immune status. During the prepatent phase, larval migration through the lungs causes tissue damage and bronchiolar obstruction by eosinophils, which can lead to fatal emphysema and pulmonary edema in heavy infections. During the patent phase, the physical presence of adult worms causes obstructive bronchitis and severe granulomatous pneumonia, exacerbated by the aspiration of eggs and debris. Finally, the postpatent phase, following immune-mediated expulsion of the worms, can trigger a severe alveolar hypersensitivity reaction known as acute respiratory distress syndrome (ARDS). Affected animals show severe dyspnea, a characteristic cough with the head held low, and ptyalism (excessive production and discharge of saliva). In ARDS, fever and depression are generally absent.

Clinical outbreaks remain uncommon and unpredictable. Episodes occur mainly in rainy temperate regions. In *D. viviparus*, infective larvae can persist in manure during dry periods and be released when rainfall returns. They can also use the fungus *Pilobolus* as a vector and be projected up to 3 meters onto herbage during sporangia dispersal. Routine use of prophylactic antiparasitic treatments may limit the development of protective natural immunity, thereby increasing the susceptibility of heifers and adult cows when they are later exposed to heavily contaminated pasture.

A positive result in an asymptomatic bovine confirms the presence of *D. viviparus* and suggests that the parasite is circulating within the group. When compatible clinical signs are present in animals sharing the same pasture, anthelmintic treatment should be considered for animals at risk. Conversely, a negative fecal PCR result does not rule out dictyocaulosis: an animal with respiratory signs may test negative during the prepatent or postpatent phases of infection.

For more information

1. Lora Rickard Ballweber, "Lungworm Infection in Animals (Verminous Bronchitis, Verminous Pneumonia)," Merck Veterinary Manual, Merck & Co., Inc., 2024, [Online]. URL: <https://www.merckvetmanual.com/respiratory-system/lungworm-infection/lungworm-infection-in-animals> (accessed August 25, 2026).
2. Michelle Arnold, "Lungworms and Acute Respiratory Distress Syndrome in Cattle," Ohio BEEF Cattle Letter, Ohio State University Extension, 2024. URL: <https://u.osu.edu/beef/2024/10/09/lungworms-and-acute-respiratory-distress-syndrome-in-cattle/> (accessed August 25, 2026).
3. Western College of Veterinary Medicine, "*Dictyocaulus viviparus*," Learn About Parasites, University of Saskatchewan, 2021. URL: <https://wcv.m.usask.ca/learnaboutparasites/parasites/dictyocaulus-viviparus.php> (accessed August 25, 2026).