

# Acute Death in Neonatal Beef Calves on Vetch Pastures

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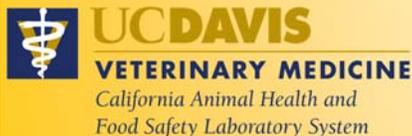
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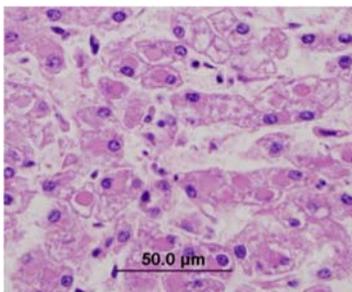
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Since fall 2005, CAHFS pathologists have recognized a new disease problem involving fall beef calves nursing cows on pastures in the central California coastal regions. The cases to date have been submitted in September and October in the years 2005, 2006, 2010 and 2011. The problem has been identified in calves from Santa Barbara, San Luis Obispo and Monterey counties. Affected calves range in ages from 2 to 14 days with most cases appearing between 7 to 14 days of age. Calves are often born normal but become weak and unable to stand. In some cases, owners have stated the calves appear drunk and one had seizures. Other owners have only found calves dead with no clinical signs. On gross examination, the calves are in good flesh with no abnormalities identified. Often the animals have an abomasum filled with milk curd. The condition is diagnosed by microscopic exam of the liver where bright red (eosinophilic) inclusions are identified in hepatocytes from affected calves. Electron microscopic examination of the inclusions is consistent with excessive accumulation of abnormal material.



Eosinophilic inclusions in the liver hepatocytes

Investigations of affected pastures have identified abundant vetch present in the pastures. The vetch and adjacent grass appear to contain a black to brownish black mold on the stems, pods and seeds of the affected vetch. The problem seems to affect pastures on wet, rainy years (2005, 2006, 2010 and 2011) when an abundant amount of vetch is present. Other summer atmospheric changes such as rain or marine layer fog have not been completely investigated to see how these affect mold growth on the forage. Once this problem has been identified in calves and the calves and cows removed from the affected pasture with abundant moldy vetch and grass, the problem seems to resolve with no new cases. Cows and calves brought back to the affected pasture at a later time appear to not be affected (calves older than 30 days of age).



Black mold on vetch pods

Based on our pathology findings and the age of calf affected, we are suspicious that the problem is a toxin ingested by the cow and excreted in her milk. Cows are eating the affected moldy vetch which may have an unidentified mold toxin present. This toxin appears to not cause illness in the cows but may be concentrated in the milk which then causes a problem in the calf leading to the liver changes. Since calves seem affected at a young age, it is possible that as they become older, maturation of their body systems allows them to inactivate the toxin as appears to happen in the cows.

Metabolic storage diseases are seen in many animals (e.g. maple syrup urine disease), including humans. These problems are often associated with genetic enzyme deficiencies or acquired from ingestion of toxins such as locoweed. Clinical signs are frequently noted during the first few months of life in genetic forms and are most often progressive and lethal. Evidence that this is probably not a genetic trait includes resolution of the problem when animals are removed from the pasture, failure to recur when returned to affected pastures at an older age, and repeated breeding of the same cow-bull pairings with some years having no affected calves.