**BVDV**

This past spring, within a week we received two calls regarding cow-calf herds located in Northern Michigan experiencing a high incidence of still births/weak calves. Farm #1 had 120 cows and lost 7 or the first 16 calves. One was still born and the other six were born live but had low vigor and would not stand or nurse. The remaining nine calves were considered normal. Farm #2 had about 100 cows and had 4 still born calves born about 6 weeks early. Both herds were working with a local veterinarian and MSUE livestock educators in trying to solve the problem. Herd investigations started with looking at nutritional programs, feed and water sources, calving management, vaccine programs and clinical presentation of the weak calves and still births. In farm #1, feeding of waste potatoes was identified as a potential risk factor, especially if high in solanine. In farm #2, there were questions about if the farms mineral feeding practices were adequate. Farm #2 also reported that several cows had “lost” their calves back in December, but was not concerned (turns out there were several others that he was not aware of that did not calve). Both farms were encouraged to submit still births and or weak calves to DCPAH. In both cases, BVDV was isolated from at least two different submissions. There were no other significant findings at necropsy. Upon investigation of the farms for BVDV, the following common risk factors were identified. Both farms had purchased cattle from multiple sources within the past 12 months. Both farms were using a killed BVDV vaccine and vaccines were used erratically. Neither farm gave two doses of the vaccine on initiation of the vaccine program. Although veterinarians were involved with the outbreak investigation, routine use of a veterinarian for herd health programming was not practiced. Both farms were encouraged to test newborn calves for potential PI. On both farms, multiple “normal” calves were found to be PI. These calves were removed from the farm. On both farms, all cattle were tested for BVD either individually or by testing the calves and using that information to determine status of the dam. Upon further investigation, the likely scenario that occurred was that virus was introduced into the farms during the summer of 2013 thru new cattle acquisitions. At this point, all pregnant cows were in the first trimester of gestation. Both herds were likely susceptible...
to BVDV infection due to inadequate vaccine practices. This led to fetal infection with creation of PI’s that were born dead, weak or in some cases normal. Both producers were informed that the damage to this year’s calf crop was already done and that they needed to look towards preventing future problems. Moving forward, vaccination and biosecurity programs on both farms were reviewed with their veterinarians and recommendations made to reduce the risk of this occurring again. Recommendations included incorporating an MLV BVDV vaccine into their vaccine program and testing incoming cattle, especially if from unknown backgrounds.


APPLE POMACE

With the high cost of corn and hay, livestock producers often are looking for alternative feeds to lower production costs. Many alternative, waste, or by-product feeds have been used successfully in beef cattle diets. However, caution needs to be observed as these types of feeds can be risky at times. Recently, we were asked to help investigate an outbreak of birth defects in a small cow-calf operation located in West central Michigan. In this operation, multiple calves had been born underweight (dwarf?) and severe skeletal abnormalities. Most were born weak and did not survive. The cows were Angus based and the sires were Simmental and Polled Hereford. Affected calves had been sired by 3 different bulls, making a genetic cause unlikely. Upon investigation of management of the gestating cows, it was discovered that the cows were supplemented in the winter during the 3rd trimester of pregnancy with apple pomace acquired from the local Gerber plant. Urea was injected into the apple pomice pile as a source of non-protein nitrogen (NPN). In previous studies by scientists at the USDA Beltsville Campus, it had been reported that the practice of feeding apple pomace supplemented with NPN can result in an increased incidence of stillbirths, increased mortality of calves and bone malformations. Calves were born under weight with shortened long bones, enlarged joints and splayed front feet. Feeding of apple pomace without the addition of NPN did not result in the same observations. The pathophysiology is not clear. A possible causes may be related to tying up of micronutrients (manganese??) making them less available for fetal growth and development.


**RED TIDE**

During the summer of 2009, a back grounding operation in Michigan experienced two acute deaths in a group of 40 500 lb crossbred calves. The calves grazed on a 20-acre pasture that contained a shallow, quarter-acre pond as their water source. The pasture consisted primarily of orchard grass and clover; an abnormal amount of noxious weeds was not found. In addition, there were wild cherry trees in the fence rows. The pond surface was covered with an unusual red film. Upon closer observation, dead crayfish and snails along the pond edge were noted. A stinging sensation occurred when water from the pond was rubbed on the skin’s surface. The red film looked like very fine vegetative material that was confined to the surface of the water. No abnormal findings were found on gross necropsy of one of the calves at DCPAH. Included on the differential diagnosis list were lightning strike, wilted cherry tree poisoning, acute nitrate toxicity, herbicide/pesticide toxicity, and blue-green algae toxicity. Good weather ruled out lightning strike and no wilted cherry trees were found to be accessible by the cattle. Fertilizer had been applied on nearby fields, but runoff from these fields drained away from the direction of the pond. Samples of the red substance on the pond were collected and analyzed by algae experts at Michigan State University. A blue-green alga, *Euglena sanguinea* was identified. This alga produces a toxin, euglenophycin, which was also identified in the water samples. *Euglena sanguinea* and its associated toxin have recently been held responsible for massive fish kills in the fish farming industry in the Southern USA. This is the first reported association of *Euglena sanguinea* with mammalian deaths. If euglenophycin was responsible for these two calves’ deaths, it represents a potential threat that producers need to manage when using surface water as water sources.
THE JUNK YARD

Recently, we received a call from a well respected seed-stock operation in Michigan. He was distraught because he found one yearling bull dead and two others acting “nutty” when he went out to do chores in the morning. The dead calf was in the barn yard but the other was wondering around out in a pasture attached to the barn yard. When asked to describe what the “nutty” ones were doing, he said they were stumbling around like they were drunk and they would run into things almost like they were blind. He said he could get close to them without them really reacting to him, making him think they were blind. He said it look liked the dead calf had been struggling where it died because the way the ground looked and the of dirt on the calf’s head and hide. So what are your differentials for three healthy yearling beef bulls showing what sounds like signs of neurological disease?? Further discussion lead to more of the story. The bulls were healthy and he had not noticed anything different the last couple days. The bulls had not left the farm. They were on pasture but being supplemented with a commercial corn diet that which had not changed in the past month. Other cattle (heifers) were also getting this supplement. The bulls had access to a barn with a small lot and was attached to a 10 acre pasture that was partially wooded. Abandoned machinery and autos were stored in the wooded section of the pasture. The dead bull was submitted to DCPAH for necropsy. Grossly, an oily sheen was noted in the rumen content. Laminar cortical necrosis, and edema of the white matter was observed in the brain histopathologically. Liver lead levels were >20 ppm (acute toxicity occurs at >10 ppm in liver tissue). A diagnosis of acute lead toxicity was made. Upon follow-up, it was discovered that the week before the “outbreak”, the producer had “junked out” several pieces of machinery from the wooded pasture as scrap metal prices were high and he needed some cash. When we walked the wooded lot and looked at several areas where vehicles had been, we could observe black stains which likely was old oil leaks. In addition, it was evident that cattle had been their recently. Prior to the advent of “unleaded” gas, gasoline had high levels of lead and this lead could be found in the oil of combustion engines. Some of the vehicles in the wooded pasture undoubtedly had run on leaded gas and had lead contaminated oil. Over time, oil had leaked onto the
ground and with the removal of the vehicles, had become exposed for three curious bulls. The ultimate outcome: both of the live bulls died so mortality was 100%. The amount of money received for the scrap iron was about 10% of the potential value of the bulls.
