COLUMBIA, Mo. – University of Missouri Extension specialists are urging Missouri producers to closely watch cattle that graze pastures containing Johnsongrass and other *Sorghum* grass species.

Cattle producers in several different drought-stressed regions of the state have recently reported cattle deaths from suspected prussic acid or hydrocyanic acid (cyanide) poisoning, an extremely sudden and rapid cause of death in livestock, says MU Extension state specialist in animal health and veterinary toxicology Tim Evans.

Prussic acid poisoning occurs when cattle eat the leaves of cherry and other related *Prunus* species of fruit trees or the leaves of immature *Sorghum* species of grasses containing cyanide-producing compounds, especially after extreme weather conditions, such as drought or frost.

Evans says more than 70 adult cattle died quickly after recently being released into drought-stressed pasture with lush new growth of Johnsongrass.

Within a few hours of grazing in this pasture, multiple cows either suddenly laid down and died, or they staggered around for a short period of time and eventually collapsed and died, says Evans. Few other clinical signs were observed, and the remaining live animals were returned to the pasture from which they originated, with several additional animals dying after they were moved.

Necropsies of 10 of the dead animals showed varying degrees of bright cherry red blood, which is commonly observed in prussic acid poisoning because cyanide inhibits aerobic metabolism and prevents oxygen in the blood from being released to the tissues, says Evans.

The attending veterinarian collected samples from the necropsied animals and preserved them and for additional testing. Thus far, Dr. Evans and diagnosticians from the Veterinary Medical Diagnostic Laboratory at MU’s College of Veterinary Medicine have preliminarily ruled out carbohydrate overload, grass tetany, nitrate/nitrite intoxication, anaplasmosis, and toxins from harmful algal blooms as the cause of death. Despite the fact that it can be challenging to accurately measure the presence of cyanide in postmortem samples, prussic acid poisoning remains the most likely cause of death in this instance, says Evans.
Sorghum species of forages include sorghum-sudan hybrids, forage sorghum, sudangrass and Johnsongrass. These forages can accumulate nitrate in their stems, especially in response to drought conditions, and cyanide-producing compounds in their leaves, particularly in rapidly growing, immature plants.

With respect to drought conditions, prussic acid poisoning involving these annual forages occurs most often when abundant rainfall briefly interrupts or occurs immediately after a drought. “When there’s a drought, these warm-season annuals quit growing but still take up nitrogen from the soil and accumulate nitrates and cyanide-producing compounds. Once the drought is interrupted temporarily by rain or drought conditions cease as normal rainfall patterns are reestablished, severely drought-stunted plants can start to grow again and look green and lush, or rapid new growth of these forages can occur,” says MU Extension state forage specialist Craig Roberts. Roberts and Evans agree that while there is generally good awareness of nitrate issues with these plants and concerns about grazing these forages immediately after a frost, many producers may be unaware that what looks like excellent green grass for grazing growing after rainfall during or immediately after a drought might contain high concentrations of cyanide-producing compounds.

Consult your local veterinarian immediately about the possibility of prussic acid poisoning if cattle collapse suddenly and die or exhibit labored breathing and staggering after being introduced to stunted or immature Sorghum species, says Evans. Veterinarians can administer intravenous sodium nitrite and sodium thiosulfate to treat prussic acid poisoning, but animals frequently die before treatment can be begun.

Prevention is likely the best way to address concerns about sorghum-related prussic acid poisoning:
• Take soil samples before applying nitrogen to pastures. Excess nitrogen increases chances of both prussic poisoning and nitrate/nitrite poisoning.
• Wait to graze sorghum varieties until they reach a height of at least 24 inches in height. Quantitative nitrate and cyanogenic potential testing procedures are strongly recommended prior to grazing. To allow the cyanide to escape or “gas off” before feeding it to livestock, wait at least 14 days after cutting and baling sorghum species for hay. Likewise, wait at least 60 to 90 days after beginning ensiling to allow cyanide to “gas off” during fermentation before feeding to livestock.
• Do not turn hungry cattle into the pasture with sorghum grasses. Fill them up on other grass or hay during the day before gradually introducing them to sorghum pastures. Don’t turn the entire herd onto a new pasture at once. Consider using “test” animals if you have not tested for nitrates or cyanogenic potential.

• Remove animals immediately from pastures when an animal is found dead. Consult your local veterinarian and extension personnel about the need for animal necropsies and forage testing.

Reference