

Toxic Pastures, Weeds and Chemicals

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I am going to hit some things that are of interest to me and some of them may be of use to you; some may seem a little bit provincial.

The first consideration about poisonings is the possibility of one being present. In acute poisoning, whether it is plant or chemical, the first tip-off, of course, is single or multiple death and illnesses that are unaccounted for. In just a matter of a few days you will have several animals involved and you cannot account for it for other reasons.

The next thing that I think is equally important, and you should start inquiring about it right away, is what change of management occurred? Has the feed been changed? Was the pasture changed? Was there something done about spraying recently? Handling is the next thing to be encountered or to investigate. Well, aside from these two basic principles, I think the only other thing to go on is a nagging suspicion that this can be a poisoning, and usually that is the way we end up; anyway, at least I do! The chronic type of poisoning is a little different problem. Luckily, for most chronic poisonings you have tissue changes that are suggestive—kidney damage related to mercury intake or liver damage related to some of the other damaging toxic agents.

Lead

I don't think you can talk about any intoxication without stressing the importance of lead because year in and year out it is the problem that we see in our clinic. Literally any time blindness, ear twitching, or convulsions occur, lead is one of the first things to consider, and we do see this as a pasture problem. Where does it arise? We start looking around and get the owner to look around. Then you go back and look behind the ranch house and in the gully there is usually a collection of all of the dumping material of that ranch for years and years! The amazing thing is that almost none of them are fenced off, so this ranch dump ground of old paint buckets, old batteries and machinery grease is a common source of problems. Old

painted barns on these pastures are well known sources. Paint on roadside signs are also dangerous. Some of these roadside signs have layer upon layer of paint often containing lead. Crankcase oil is a problem. In our area, we use the wheatland after harvest for stubblefield feeding. Very often, indiscriminately or unthinkingly, the owner has drained his crankcase in the fields. There may be buckets of it actually there in the fields, and, as you know, crankcase oil is high in tetraethyl lead and this is a source of trouble, easily diagnosed because you can get the smell. Affected animals simply smell like crankcase oil and gasoline! Sometimes it is hard to convince the owner that he has lead problems, and he does not search very well. So, the feature here is to go to blood analysis, or liver and kidney examination. This usually clinches the diagnosis and it solves the problem for you, but also it convinces the owner.

Now, we use the common treatment of magnesium sulfate orally for lead in the gut, but we have started using BAL for the first 24 hours of treatment rather than chelating agents. The reason for this is if you have treated lead with a chelating agent for the first 24 to 48 hours they tend to get more toxic. The chelating agent mobilizes lead stored in the tissues, and it increases the actual symptoms for the first 24 or 48 hours, until it is eliminated, so with the use of BAL this eliminates the circulating lead in the blood during the first 24 hours. We use two ccs of BAL per hundred pounds body weight, administered intramuscularly, then half that dosage 8 to 12 hours later. Then we go to a chelating agent (EDTA). Supportive treatment is essential. Many of these are blind; they are not eating; they are not drinking; supportive treatment keeps them alive.

Salt Poisoning

Salt poisoning is a problem I get telephoned about several times in the fall and off and on throughout the year. I am talking about acute salt poisoning in range cattle. They have been ranged through the summer on a salt-free basis because the owner has not salted them. He brings them in to my office and the error is in what has been advised to farmers for years and that is: feeding cattle pulverized salt so they can eat it, but not feeding them box salt because they cannot get enough. When they come in and have not had salt for one, two, or three months, they will be staggering and wandering. There is a diarrhea because of the salt but the other amazing thing is that usually the rumen is distended due to water intake, they have taken salt and they drink a lot of water. I have not encountered convulsions in cattle as you see in pigs. Another diagnostic feature is hemoconcentration. The treatment consists of removing salt and relieving the distended rumen. We limit water intake and usually in a few days the animal recovers. A five percent dextrose solution is given as supportive treatment; stronger solutions are contraindicated. Do not administer corticosteroids because of their effect in retaining sodium. Prevention is based on giving salt regularly.

Herbicides

Arsenic and chlorate have zero tolerance in foodstuffs, but fortunately they are being withdrawn from the market. However, our ranchers still have some and we still see occasional problems. Inorganic arsenic shocks me. It is still on some shelves for sale, and if the farmer does not read the label he can kill animals. We had our last case of poisoning last spring when a client lost several animals. It is still being used as a cotton defoliant and in dips. We do not see it as a problem around orchards anymore because arsenic seems to have been dropped for orchard use. Accurate diagnosis is achieved by testing the liver and kidney for arsenic content. Treatment consists of administering BAL. We have had some success with arsenic treatment in early cases. If you get it several days along the road, they don't respond, and so I think timing is important. Arsenic trioxide is a common problem but I want to discuss organic arsenic. This is a "hot issue" in the Northwest. I am talking about two products—one goes under the initials MSMA (mono-sodium acid methane arsonate), and the other one is cacodylic acid. What are these? The Forest Service decided that these could be used as herbicides. They decided that they were safe for use around animals, and they are used for thinning of trees in forests. We had poisoning in cattle with access to these forests in the Northwest. My colleague, Dr. J. O. Dickenson, is part of a research team working on this problem. He has determined toxic levels and found that you can kill equally effectively with the organic form of arsenic used in forests as you can with inorganic arsenic. In addition to the acute and chronic symptoms of arsenic poisoning, there is another feature, namely nephrosis, which is characteristic of the organic form of arsenic poisoning. In both the acute and chronic forms, nephrosis is present. The Forest Service is not using it for thinning the forest now! But unfortunately many state forestry services are still using it.

The thing that shocks me the most about the use of arsenic as a soil sterilizer is the fact that it persists for years in the soil as a potential poison. It has not been determined whether organic arsenic will be retained likewise.

Chlorate

Chlorate has a salty taste and cattle like it, so if they have access to it they will eat it. Clinical signs are dyspnea and cyanosis. If the animal survives, tarry feces occur due to the irritant effect on the gut. Chlorate has another peculiarity in that blood does not clot in the cadaver, and for this reason it may be confused with anthrax. There is one redeeming feature—the animals do have *rigor mortis*. They do not lose *rigor mortis*, such as is described for anthrax. Now, chlorate poisoning is a methemoglobinemia-producer. So, you handle it like nitrate poisoning by treatment with methylene blue IV. Blood transfusions may be of aid also.

Tansy Ragwort

Tansy ragwort is not a palatable plant, but where inadequate feed is present cattle will have to eat it. Tansy ragwort is a problem initially in Eastern Canada, on the Atlantic Seaboard, Northwestern U.S., Florida, and we probably have it from California up through Oregon and Washington. It is a coastal plant; probably both the Atlantic and Pacific Coasts imported it! It is a chronic liver toxin and we are seeing more and more of these cases. It is a problem as a second growth plant in mountain pastures, on roadsides, or even in hayfields. The toxic principal is an alkaloid, and it damages the liver. Diagnosis is made on autopsy which reveals cirrhosis of the liver. Clinically, a BST liver function test will show a prolonged BST persistence in the blood which is a means for diagnosis. The best preventative measure is to graze sheep on the affected pasture. 24-D takes care of the plant in the field. As forest regrowth occurs, shading it out takes care of the plant. If cattle are retained they should be given adequate feed and minerals.