



Poisonous Plants and the Goat Herd

By Jackie Nix

What Makes a Plant Poisonous?

We all hear about poisonous plants and stories of how folks have lost prized animals that have eaten them. But, to add to the confusion, we also hear stories of people who have pastured goats in fields with dozens of known poisonous plants with no apparent ill effects. How can a plant be poisonous in one instance and harmless in another? The reason is that numerous factors influence the action of poisons and the severity of a goat's reaction to them. Among these are, 1) the amount eaten and over what period of time, 2) the chemical nature of the poison, 3) the source of the poison (part of plant and condition of the plant), 4) the amount of fill in the rumen prior to ingestion of the substance, 5) species of animal poisoned, 6) the general health of the goat prior to eating the poisonous plant and 7) the size, age and sex of the animal.

It is important to remember, "The dose makes the poison". The amount eaten is critical. With some plant-born chemicals, such as the prussic acid produced in wilted black cherry tree leaves, only a few mouthfuls can be deadly. However, with others, like the glycosides in wild mustard seeds, large amounts must be eaten before symptoms of poisoning appear. Remember that every substance on earth is capable of poisoning animals at a critical dosage, even water. Some poisons must be ingested over a long period of time in order to cause damage; others cause damage immediately.

The chemical nature of the poison is also very important when considering poisonous plants. Some common poisonous compounds found in plants include glycosides, alkaloids, oxalates, oils, minerals, resins and nitrates. Some of these poisons affect the nervous system, some the blood, and still others the intestinal tract or the heart. Knowledge of the specific poison and its mode of action will aid in trying to treat specific poisoning cases. For example, nitrates sometimes found in Johnsongrass or Bermudagrass, bind to hemoglobin in red blood cells rendering it incapable of carrying oxygen to the tissues. In acute nitrate poisoning cases, the only way to counteract the symptoms is to reverse this chemical reaction in the blood.

In many instances only certain portions of the plant are poisonous and only in certain conditions. Black cherry leaves are only poisonous when they are in a wilted state. They are perfectly safe when fresh and green or when brown and dried. However, all parts of some plants, such as Jimsonweed, contain poisonous compounds.

In many instances, goats with a full stomach will be less susceptible to poisoning than those with an empty one under similar conditions. The reason is that rumen contents can act to dilute the poisonous compounds and to slow down their absorption.

Poisons do not affect all species equally. Some species are more susceptible to certain poisonous compounds than others. This may be due to different grazing preferences and habits or also different

physiological factors. For example, pigs and sheep are most susceptible to the fruits of the Chinaberry tree while goats, chickens, ducks and cattle are less susceptible.

The sex, size and age of the goat are also important factors. Size is important in that a mouthful of poisonous plant will affect a smaller goat more than a larger goat because the dose of poisonous compound per pound of bodyweight will be larger in the smaller goat. Since bucks are often larger than does, bucks would be less susceptible from a size stand point; however, since bucks are dominant to does and often get the lion's share of the feed, bucks can be more susceptible in some situations. For example, if Rhododendron cuttings from a yard are thrown to a group of goats, the buck may eat the largest share and be most susceptible to poisoning.

Contrary to popular belief, goats are not born knowing which plants are poisonous and which are not. This knowledge is learned through the social interactions of the herd. In the wild, every goat eats the same kind of plants at the same time as the dominant or head goat in the herd. Young kids learn what forages are edible by mimicking older, more dominant goats. If kids are not allowed to interact with older goats, the flock can be susceptible to poisoning. With only a few exceptions, most adult goats will not eat poisonous plants unless forced to do so by unusual or artificial conditions. The first means of controlling plant poisonings then is to prevent the following conditions from occurring.

Starvation. Lack of good forage is the most common cause of plant poisoning. This most commonly occurs in early spring, winter, late fall, during droughts, or any time an area has been overgrazed.

Deficient rations. Goats may graze poisonous plants if they lack required nutrients or if their diet is unbalanced. Mineral deficient goats may be drawn to plants that they normally would not eat in search of the minerals they are lacking. It is well known that healthy animals are more likely to survive and thrive after contact with a poisonous compound than unthrifty ones.

Waste and trash. Goats should not have access to dumps where they can be exposed to household and farm chemicals and pesticides. Clippings from the yard, garden or houseplants may also be extremely dangerous.

Newly plowed or exposed areas. Plowed fields, eroded ground and new ditches may expose poisonous roots that otherwise would have been unavailable to the goats.

Dry or partially dry water holes. Poisonous roots may become exposed, seeds can germinate in the newly exposed soil, and increased numbers of bacteria or algae in stagnant water can cause poisoning.

Incidental causes and curiosity. Many causes of poisoning cannot be related to a particular situation. Sometimes animals may accidentally eat a poisonous plant while grazing other plants or by eating hay in which the poisonous plants have been mixed.

Symptoms of Poisoning

Symptoms of poisoning are variable and are usually not specific for a particular plant. Unfortunately, the first symptom noticed may often be a dead goat. Some symptoms include: frothing at the mouth, vomiting, staggering, trembling, crying for help, rapid or labored breathing, convulsions and sudden death. If you observe any of these symptoms and suspect poisoning, first try to figure out what poisoned the goat. Then, remove the goat from the suspected source of poison. Call a veterinarian as soon as possible. If possible, remove the poison from the goat. You can place 2 tablespoons of salt on the back of the goat's tongue to induce vomiting. You can also administer charcoal tablets and rehydration fluids

along with some mineral oil. The charcoal will bind some of the toxins, the fluids will prevent dehydration and the oil will coat the gastrointestinal tract and prevent foaming.

Control of Poisonous Plants

Once a poisonous plant is found in a pasture the first question is how to eradicate it. Since the types and species of poisonous plants are many and varied it would not be practical to try to list specific control methods here. Contact your local Cooperative Extension agent or agronomist to help you with specific problems. Some general control methods follow, however:

Destroying

Burning, cutting, digging or chemical use can eradicate poisonous plants. But be aware that certain herbicides temporarily increase the palatability of foliage and thus the poisoning threat. Goats should be removed from the area to be treated until all the target plants are defoliated or removed.

Fencing

Since it is often very difficult and/or expensive to totally eradicate poisonous plants, fencing out the areas where they grow is often a better solution. Be sure to make sure that goats reaching through the fence cannot reach the poisonous plants.

Good Management

Pastures management is too often ignored. Through proper fertilization, liming and grazing management desirable forages will often out compete undesirable poisonous weeds. Most poisonous plants can be found around buildings, fences, streams, ponds, springheads, wooded areas or dumpsites. So take care to safeguard these areas.

In summary, many factors affect the action of poisonous compounds on goats. In general, goats will not normally eat poisonous plants unless artificial conditions are created by humans. Symptoms of poisoning are vague and not specific for particular plants. Often the first sign of trouble will be a dead goat. If poisoning is suspected, remove the goats from the suspected source of poison, and then call a vet. Poisonous weeds may be controlled by use of herbicides, fences and proper pasture management.

Be sure that you provide a nutritionally balanced diet for your goats to prevent them from seeking out harmful plants in search for nutrients. Free choice access to **Sweetlix 16:8 Meat Maker mineral** for goats or the **Sweetlix 20% All Natural Protein block** for goats will provide 100% of the goat's trace mineral needs, including copper and selenium. Good mineral nutrition will help produce healthy goats that will be less likely to consume poisonous plants and also more likely to survive accidental poisoning than unthrifty goats. For more information about these supplement products for goats or a free brochure, call 1-800-325-1486.

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