Poisonous Plants

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Editor's Note: We plan to run a series of short articles on poisonous plants, one each in the next 4 or 5 issues. If they are well accepted and the author agrees, we may extend the series.

Much of the land area of the United States and of the world is devoted to the grazing of livestock. Through the food and fiber it provides, the livestock industry thus plays an important role in the economic well-being of the people of the world. Poisonous plants are a principal cause of economic loss to the livestock industries of the world and therefore impact heavily on the production of this food and fiber.

There are many ways by which poisonous plants exert their effect on animals. These include death, debilitation, abortion, decreased reproduction, photosensitization, chronic illness, and birth defects. In addition to these direct effects, there are other indirect but costly effects. These include things such as altered grazing programs, additional fencing, loss of forage, increased labor costs of herding and caring for livestock, and in some cases the use of supplemental feeding programs.

Losses of livestock due to poisonous plants may sometimes be minimized if it is remembered that poisoning of livestock is more often influenced by this type of management employed, by the condition of the range, or by the kind of animal chosen to use the range, than by the mere presence of the poisonous plants. The real danger is whether or not the poisonous plants are eaten. Many poisonous plants are unpalatable and are seldom grazed unless animals are forced, and these are usually a problem only when animals are allowed to eat too much of the plant too fast. Conversely, other plants that are classified as poisonous under many conditions may form an important part of the grazing animal's diet.

There are a few important factors that must be remembered if livestock poisoning by plants is to be minimized. First of all, one must be able to recognize potential poisonous plants. Then he must understand the conditions under which poisoning may occur (stage of plant growth, effect of site, range conditions, drought, and factors that cause animals to become overly hungry); and finally, he must be able to establish and implement alternate or remedial management programs until the dangerous period is passed.

Because of their great economic importance to those using rangelands of the United States, a thumbnail sketch of some of our most important poisonous plants will be presented periodically. This is the first of that series.

Larkspur

The larkspurs (*Delphinium* spp.) are one of the most important groups of poisonous plants to the cattle industry in the Intermountain West. Every year hundreds of thou-

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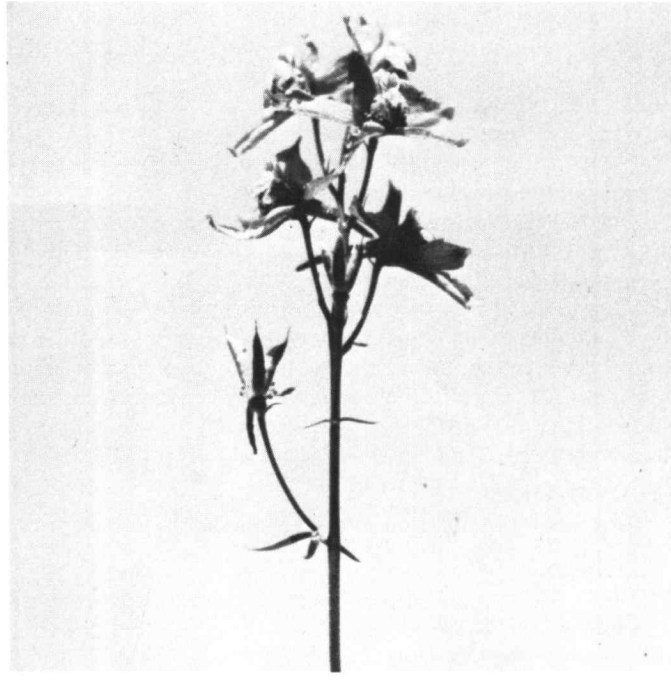

Low larkspur has spurred blue flowers that grow on a single unbranched stem. It grows on grassy hillsides and in sagebrush areas. It may reach a height of 2 feet.

Tall larkspur has spurred blue flowers. It is a perennial that is found in thick clusters on hillsides and sometimes in meadows.

sands of dollars are lost due to cattle poisoning by these plants. Some ranges have been abandoned for cattle grazing because the operation could not stand the losses.

Description and Distribution

The larkspurs, species of the genus *Delphinium,* are native to every continent in the northern hemisphere. In the United States most species are west of the Mississippi River with the principal livestock poisoning problems occurring in the 11 western states.

The *Delphinium* are closely related to garden variety delphiniums and are perennial or rarely annual. They are erect herbs that grow from a single tuberous, rhizomatous, or clustered tuberous rootstock. The leaves are alternate, lobed, and deeply cleft or divided. Flowers are in terminal racemes with 5 irregular, petal-like, sepals. The upper sepal is problonged into a spur at the base.

The larkspurs have been divided into two groups, tall larkspurs and low larkspurs, on the basis of habitat and height. The tall larkspurs (above 76 cm high [30"]), such as *D. barbeyi,* and *D. occidentale* grow in the higher mountain areas in moist and fertile sites. The low larkspurs (less than 76 cm high) grow in the lower drier foothill areas. Plains or geyers larkspur *(D. geyeri)* is classed as a tall larkspur but really doesn't fit either arbitrary classification. It grows on the high plains area of southern Wyoming and northern Colordo.

Toxic Principle

The poisonous compounds of the *Delphiniums* are a group of complex diterpenoid alkaloids.

Toxicity

Several factors affect the toxicity of the larkspurs, such as stage of growth (young, growing plant is more toxic than mature plant), species, and site. Larkspur is palatable to both sheep and cattle, but it is much less toxic to sheep. Thus, it is much safer to graze sheep on larkspur than cattle. Many good high mountain cattle ranges can be used only by sheep because of heavy larkspur infestation. Cattle may graze small amounts of larkspur for long periods, but if they consume too much too fast, they may be severely affected within a few hours.

The signs of poisoning include general body weakness, uneasiness, muscle tremors, and stiff gait. The animal may suddenly collapse, especially if disturbed. Death may follow.

Larkspurs probably cause more acute deaths to livestock than any other western poisonous plant, and therefore pose an especially serious economic threat to cattlemen.

Conditions of Poisoning

Larkspur is most toxic in the young-growing stage. Therefore most losses occur on low larkspur early in the spring and on tall larkspur before the plant comes into blossom in July. Losses can be especially serious if cattle are allowed to graze in larkspur when they are hungry as after having been trailed, trucked, or otherwise handled; but due to its palatability, poisoning can also occur under normal grazing conditions at any time on ranges infested with larkspur.

Prevention

Tall larkspur can be successfully controlled by spraying it during early flower stage with 2,4,5-T two years in succession.

Plains larkspur can be controlled by spraying with picloram and low larkspur with 2,4-D.

Contact your local County Weed Control Supervisor or your County Agricultural Extension Agent for details of herbicidal control programs.

Suggested Additional Reading

Cronin, E.A., and Darwin B. Nielsen. The ecology and control of rangeland larkspurs. Utah Exp. Agr. Sta., Logan, Utah, Bull. 499.
Olsen, J.D. Tall larkspur poisoning in cattle and sheep. JAVMA 173:762-765. 1978.