UNIVERSITY OF IDAHO
College of Agriculture

TALL LARKSPUR and its CONTROL

By
Paul J. Torell
Robert E. Higgins

IDAHO Agricultural Extension Service

Bulletin No. 407
April 1963

TALL LARKSPUR AND ITS CONTROL

By

Paul J. Torell and Robert E. Higgins[1]

Tall larkspur is the most poisonous weed affecting cattle on our mountain ranges. On larkspur-infested ranges, 3 to 5 percent of the cattle die each year from the deadly alkaloides (strichnine-related chemicals) that are in the plants. Cattle losses have been as high as 20 percent on some ranges. One Idaho cattleman lost 25 Hereford cows in 1 year in a 20-acre patch of larkspur.

The threat of larkspur poisoning causes large forage losses. Deferred grazing, fencing, and herding are frequently used to avoid cattle poisoning. These measures do not allow the excellent grass that grows in tall larkspur areas to be used at a time when it is most palatable and nutritious. Deferred use of mountain ranges contributes to over-use of foothill and desert ranges. Such precautions do little to eliminate the problem. The deadly weeds remain year-after-year.

Characteristics

All larkspurs belong to the crowfoot family. The expression "tall larkspur" actually refers to a number of tall-growing larkspur species. However, in Idaho one species **(Delphinium occidentale Wats.)** is the chief cattle killer. In this bulletin we will simply call it "larkspur."

This larkspur is native to the mountain ranges throughout southern Idaho but is most abundant in the eastern and southeastern portions of the state. Typically it occurs as patches in ravines, gullies, and aspen parks at elevations from 4,500 to over 9,000 feet. It is a shallow-rooted perennial which grows very early in the spring. As the snow melts, its shoots emerge from a short, vertical rootstock. From emergence to the advanced flowering and early seed-pod stage, the plants are extremely poisonous. Although poisoning decreases after midsummer, some cattle losses have been reported in September.

Description

Larkspur in flower is a conspicuous weed (note the cover illustration). The many-stemmed plants range in height from 2½ to 6 feet. They have an abundant clump of basal foliage above which rises a leafless flowering stalk. The leaves, flowers, and

[1]Assistant Agronomist. Parma Branch Experiment Station; and Extension Agronomist.

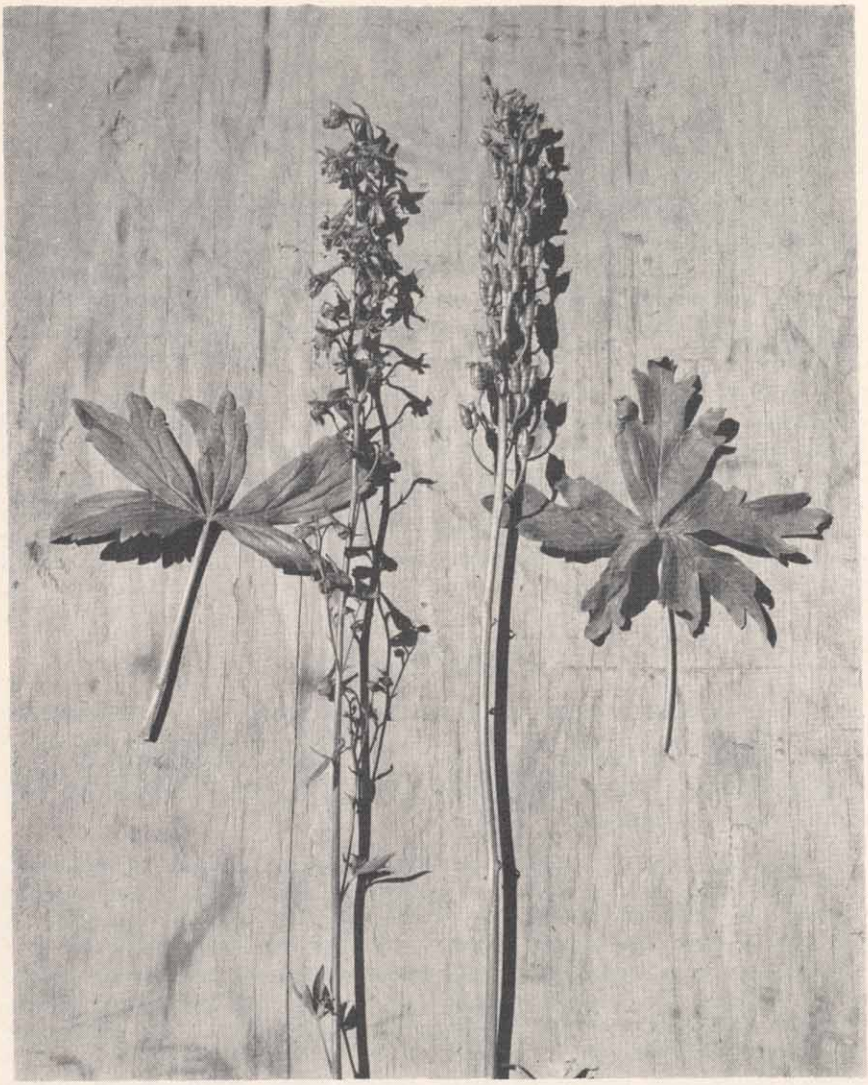

FIGURE 1—Characteristic larkspur features are: A—crow-footed leaves; B—long spikes of spurred flowers; C—oblong seed pods tapering to beaks and having prominent separations.

seed pods are characteristic features of larkspur (figure 1). The so-called crowfoot leaves are divided into 3 to 5 main separations each of which is again divided 2 or more times by irregular-shaped clefts. The long spikes of spurred flowers are variously colored. Most often they are blue though some are mottled with white and others are reddish-violet. The seed pods are oblong, point upward, and taper to beak-like points. At maturity the pod is separated and appears to be a group-of-three.

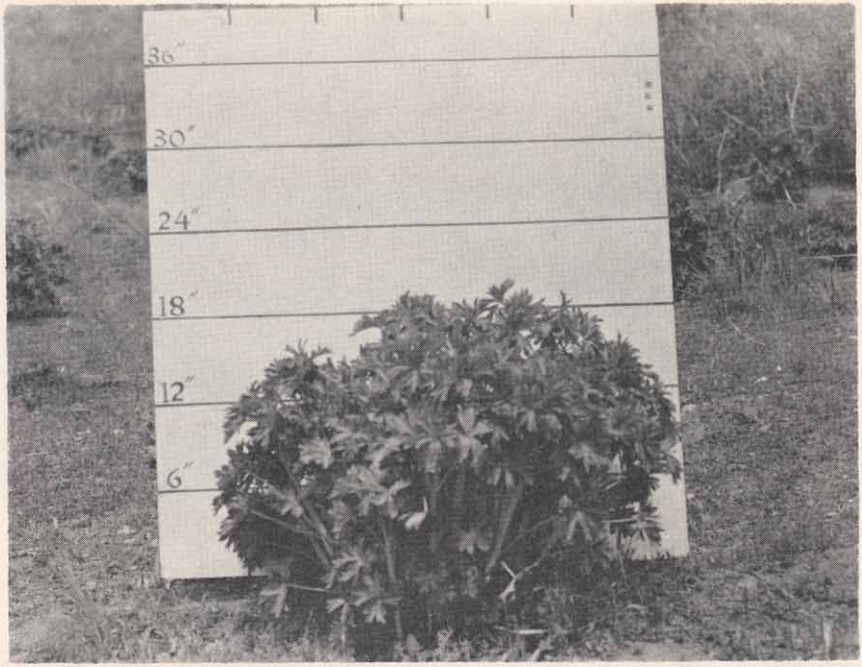

FIGURE 2—The important vegetative stage when larkspur should be sprayed with 2,4,5-T.

Larkspur in the vegetative stage resembles certain harmless plants (figure 2). Some of the wild buttercups, clematises, peonies, and geraniums start their growth with a dense clump of basal foliage having crow-footed leaves. Recognition of tall larkspur in the vegetative stage **(before the appearance of the flowering stalk)** is important: This is the time when 2,4,5-T must be applied for a successful kill and is also the time when the weeds are most likely to kill cattle. Ranchers unfamiliar with larkspur during this critical period should call on their county agents or others who can recognize it on sight.

Control

Formerly hand-grubbing of larkspur was the only control. The method is effective if the plants are grubbed to an approximate 8-inch depth and the vertical rootstock is completely removed. The branching, fibrous root system below the rootstock need not be removed. Although grubbing still has some use for destroying a few isolated plants, it is slow and expensive for widespread control.

Herbicides now offer a practical means of eliminating many larkspur infestations. The main limitation of chemicals is their

PLOT A

PLOT B

FIGURE 3—Two adjacent research plots are shown: A—2,4,5-T gave a good larkspur kill. At maturity the air-dry grass yield was 2700 lb./A. B—2,4-D gave a poor larkspur kill with a mature grass yield of 750 lb./A

cost. Rather high rates of 2,4,5-T or certain soil sterilants are necessary to kill larkspur. Either is expensive and restricted to ground application. Aerial application is not practical. The outstanding advantage of chemical treatment is that the larkspur is killed and replaced by grass (figure 3).

Control with 2,4,5-T:

Spray large, dense patches of larkspur with a low volatile ester of 2,4,5-T. Do not use 2,4-D or any of the 2,4-D - 2,4-5-T mixtures.

Rate and application:

To each 50 gallons of water add 4 pounds acid equivalent of 2,4,5-T. Spray until the larkspur foliage is just wet. Take care that plants growing under trees and bushes receive their full share of the treatment.

Time to spray:

The vegetative stage is the proper time to apply 2,4,5-T (figure 2). Timing is vital. Spray any time after all shoots have emerged but before the flower stalk with its buds is evident. Depending on season and elevation, larkspur will be ready to spray from the third week in May to mid-June.

Re-treatment:

A few larkspur plants will likely survive the first year's treatment. They can be eliminated with another 2,4,5-T application or by spot treatment with a soil sterilant.

Precautions:

Because cattle may be especially attracted to sprayed foliage, keep them away from treated areas until the larkspur foliage dies down and is overgrown by grass. This will probably take about 2 weeks.

Eradication with soil sterilants:

In spite of their high unit cost, soil sterilants are sometimes the most convenient and economical way to kill larkspur. They should be used where larkspur cannot be sprayed in the vegetative stage with 2,4,5-T, where movement of spray equipment is difficult, where heribicides have to be "packed in" away from roads, and where larkspur plants are widely scattered.

Borate or borate-chlorate mixtures give complete larkspur kills with no fire hazard beyond that of dry vegetation. It is best to treat dense larkspur patches with an over-all broadcast application, making sure of even distribution. When larkspur is scattered, most efficient herbicide use will be had by spot-treating individual plants. The chemicals will kill larkspur when applied any time of the year. However, fall treatment after cattle have been removed from the range is preferred. Late spring or summer treatments will leave poisonous larkspur foliage available to cattle during the treatment year. There is some hazard that salt-hungry animals may be especially attracted to the treated areas.

The effective herbicides and rates for broadcast or spot treatment are shown in the following tabulation:

Herbicide	Application and rate		Remarks
	Broadcast lb/100 sq. ft.	Spot-treatment quantity per plant	
Concentrated Borascue	4	2 teaspoons	easy to broadcast, does not injure grass but has high weight requirement.
Polyborchlorate	2	1 tablespoon	difficult to broadcast, rate must be carefully controlled to prevent grass injury.
Chlorax-40	(not recommended)	1 teaspoon	preferred for spot-treatment, broadcast application leaves bare ground.

PESTICIDE RESIDUES: These recommendations for use are based on the best information currently available for each chemical listed. If followed carefully, residues should not exceed the tolerance established for any particular chemical. To avoid excessive residues, follow recommendations carefully with respect to dosage levels, number of applications, and minimum interval between application and harvest.

The grower is responsible for residue on his crops as well as for problems caused by drift from his property to other properties or crops.

Published and dsitributed in furtherance of the Acts of May 8 and June 30, 1914, by the University of Idaho Agricultural Extension Service. James E. Kraus, Director; and the U.S. Department of Agriculture, cooperating.