

PUNCTUREVINE *(Tribulus terrestris)*

INTRODUCTION

Puncturevine, also known as bullhead or goathead, originated in Europe. This plant was first recorded in California in 1903 and the Pacific Northwest in 1924 and moved into Canada in the early 1970's. In BC it occurs only in the Okanagan Valley, as far north as Vernon, and in the lower Similkameen region. It is classified as a noxious weed for the Regional District of Okanagan-Similkameen.

Puncturevine prefers dry, sandy or gravelly soils and requires less water than most plants. The most distinguishing feature of this weed is its spiny seedpods, for which it is appropriately named. The spines can damage the feet of humans, wildlife and domestic animals and can injure the mouth, stomach or intestinal linings of animals when ingested. The spiny pods also puncture bike and small vehicle tires. This 'hitchhiking' is the primary mechanism for dispersal of puncturevine.

IDENTIFICATION

- Silky haired annual
- Shallow taproot
- Green to reddish brown stems (0.3 – 1.5 m long)
- Normally forms dense mats but may grow upright where there is competition for light.
- Leaves are 13 mm long, opposite, and divided into 4-8 pairs of oval, 13 mm leaflets
- Yellow flowers appear from late spring or early summer until frost, opening in the mornings only

Flowers are solitary on short stalks, each consisting of five petals, 13 mm wide. The fruit is a roughly circular, hard spiny bud with five sections that split when mature. Each bur has two spines and contains 2-5 seeds. The spines hook into humans, wild and domestic animals, tires and other surfaces, allowing for the seeds to be dispersed to new areas.



Puncturevine flower



Seedpod

BIOLOGY

Puncturevine is annual and reproduces only by seed. Without competition a single plant may produce up to 1 million seeds. The seeds are found within the burs (fruit). The seed nearest to the pointed end of the bur is the largest and usually sprouts first. The rest of the seeds germinate in order of position in the bur. Germination usually starts during spring and continues until frost. Three weeks after the plant begins to grow, flowers begin to appear. Fruits occur 1-2 weeks later.



INTEGRATED MANAGEMENT

The best overall method of control for puncturevine is an integrated program using a combination of control methods. Small infestations can effectively be controlled by hand pulling or digging before flowering and seed production. Herbicides are better suited for medium-large infestations where it is impractical to use other management methods. In agricultural areas, infestations can be tilled before seed production.

PREVENTION

The most effective way to ensure that your lands do not become infested with puncturevine is by prevention. Here are some recommendations to prevent puncturevine from invading your property:

- Learn to identify puncturevine and other invasive plants.
- Maintain your crops and natural lands in a healthy, vigorous condition to ensure a competitive plant community; competitive perennial grasses and forbs utilize water and nutrients that would otherwise be readily available to puncturevine.
- Cooperate with adjacent landowners and encourage them to control puncturevine
- Immediately re-vegetate disturbed, bare soils with a suitable seed mixture that provides dense, early colonization to prevent weed invasion.
- Remove seedpods from vehicle and machinery tires before leaving a puncturevine infested area.
- Do not move contaminated soil, gravel or mulch to a new area.



Puncturevine seedling

Regularly patrol your property for new puncturevine plants beginning in June. Puncturevine continues to germinate throughout the summer months; therefore, new plants may grow in areas that have recently been controlled. Check for new plants every 3 weeks until frost.

PHYSICAL CONTROL

The first plants found in an area should be removed before seedpods begin to form. If seedpods are already present, the plants should be disposed of by burning or burial at the landfill. Methods of control include hoeing, shallow tillage or hand pulling of small patches. For control of established patches, plants must be removed annually, prior to seed production. After several years the seed bank will be depleted; however the area should continue to be monitored annually.

For further information on invasive plants in the Okanagan-Similkameen, go to: www.oasiss.ca
To learn about invasive plants elsewhere in BC, go to: www.weedsbc.ca or www.bcinvatives.ca
For more information about the Okanagan-Similkameen Invasive Plant Program please contact the Regional District at 250-492-0237 or toll free at 1-877-610-3737.

BIOLOGICAL CONTROL

Two species of weevils, *Microlarinus lareynii* and *M. lypriformis*, were introduced to the United States in 1961. The larvae of the *M. lareynii* feed on the seeds, while the adults eat the foliage. *M. lareynii* was released in Osoyoos in 1986; however, this agent has yet to successfully establish in the Okanagan.

M. lypriformis is a stem mining weevil. Its larvae attack the plant stems. It is established in Oregon, but attempts to establish the weevil in Washington and Idaho have failed.

When used in conjunction in the United States, these two weevil species have provided effective control over large puncturevine infested areas.