



Puncturevine

Tribulus terrestris Syn. *T. hispidulus*, *T. lanuginosus*, *T. terrestris* var. *hispidissimus* (Aka puncture weed, bullhead, goathead, tackweed, caltrop)



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Overview:

Puncturevine is a summer annual (perennial in warm climates) herb native to the hot, dry climates of southern Europe.³ The suspected method of introduction is in the wool of sheep imported from the Mediterranean somewhere around 1900. Puncture vine grows very low to the ground forming a dense mats 0.5-1.5 m diameter. The stems radiate out from the root.³ It grows a very deep tap root (2 m or more) with large volume that allows it to access all moisture in the soil profile of dry environments. It is also a very efficient user of water, allowing it to survive drought. Above ground plant parts are killed by frost, but it can re-sprout from the root. Nodules containing bacteria and cyanobacteria can be found on puncturevine roots.¹

Seeds of puncturevine germinate in spring when temperatures and moisture are sufficient, meaning it can germinate throughout the growing season. Flowering begins within 2-5 weeks of emergence and can continue for several months. Fruits form about 2 weeks after flowering. These fruits/burrs mature in another 2 weeks before splitting into 4 or

5 segments. Each segment is armed with spines arranged so that at least one is pointing upwards when lying on the soil surface.¹ These spines are strong enough to penetrate bicycle tires. A typical plant can produce 200 to 500 seeds per growing season.³

Puncturevine is a serious competitor of crops, especially in dry conditions. The burrs can be a nuisance to pickers in orchards and contaminate harvested produce.¹

Puncturevine's burrs can puncture the feet of livestock, causing suffering, infection, and lameness, especially in horses.¹

In some countries puncturevine is used as a tonic and there is even some evidence that it can improve testosterone function in men. Care should be exercised as puncturevine contains poisons that can harm humans.¹

Habitat:

Puncturevine grows on almost any soil type but grows best in dry, loose, sandy soils, and dunes or loose blown soils around field margins. It also grows in heavier, compact soils

which are moist.¹

Identification:

Stems: Are greenish-red, up to 2 m long¹ with branches 20-60 cm long. Stem can be smooth, finely hairy or covered with coarse, firm hairs.² Stems are generally prostrate but become erect in shade or in competition with other plants.¹

Leaves: Are opposite, even-pinnate, 1.5-5 cm long with 6-16 leaflets. Leaflet blades are oblong, 5-10 x 2-5 mm, base slightly oblique, margins entire, and tips rounded points.²

Flowers: Are yellow, 5-petaled, 7-15 mm in diameter, and borne singly on short stalks in the axils of the smaller of each pair of leaves. They open in the morning and close and shed their petals in the afternoon.¹ Fruits about 1 cm in diameter mature and split into 4 or 5 segments containing 1-4 seeds each. Seeds are yellow, more or less oval and 2-5 mm long.¹

Prevention:

The primary control method of puncturevine
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Puncturevine (Continued)

is to prevent seed production and dissemination of the seeds. Seeds can be spread in hay and seeds can stick in passing tires, clothing, fur, feet, and feathers.³ Seeds can remain dormant and viable for 3-6 years, longer if deeply buried.¹ Seed production is quick, so control efforts will need to be repeated through the growing season.

Control:

Grazing: The sharp spines of the burr cause mouth and intestinal injuries to grazers. It is toxic to sheep, causing light sensitivity which leads to skin lesions, swelling and eventual necrosis of skin, lips, ears, and even death in young animals. Puncturevine can also cause nitrate poisoning in both cattle and sheep.³ Invasive plants should never be considered as forage.

Mechanical: Repeated, shallow cultivation before seed production, which severs the taproot can be effective, but can also bury seed. Deep cultivation only brings buried seed to the surface to germinate.¹ For small or new infestations the best practice is to hand pull or hoe out plants before seed production, or plants can be pulled and burrs raked up. Synthetic mulches must be deep enough to exclude all light to be effective. Mowing is not an option as plants are generally below cutting height.³

Chemical: Currently no selective herbicides are registered for use on puncturevine. Always check product labels to ensure the herbicide is registered for use on the target plant in Canada by the Pest Management Regulatory Agency. Always read and follow label directions. Consult your local Agricultural Fieldman or Certified Pesticide Dispenser for more information.

Biological: A stem boring (*Microlarinus lareynii*) and a seed/fruit boring weevil (*Microlarinus lypriformis*) were introduced into North America from Italy in 1961. They have proven rapid establishment and good control, but the agents are killed by very cold conditions.¹



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REFERENCES

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