

Puncturevine

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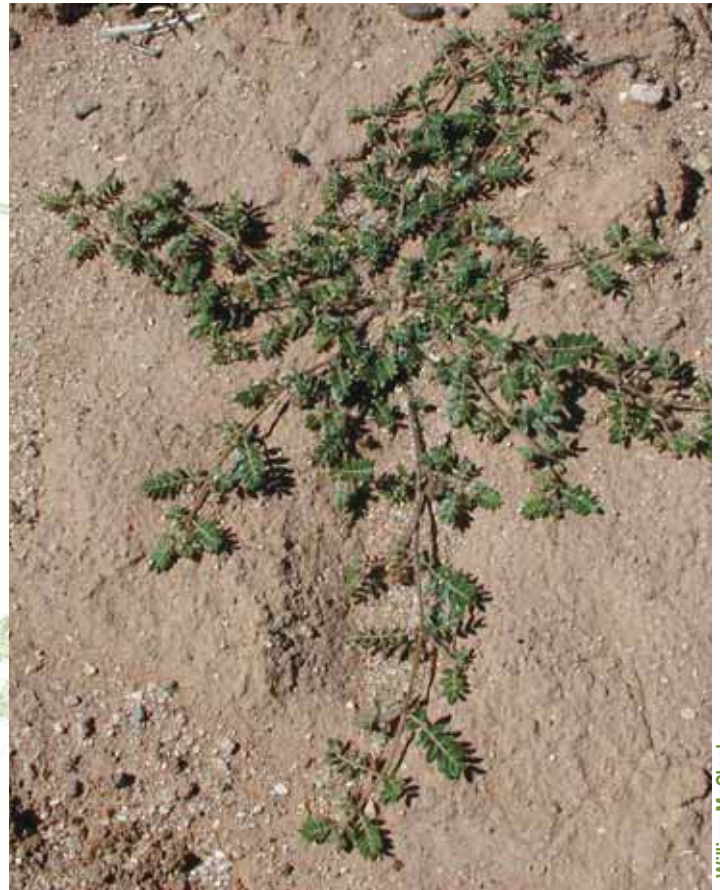


Puncturevine (*Tribulus terrestris* L.) is a prostrate summer annual weed that is widely distributed in Arizona and is also known as bullhead, goathead, Mexican sandbur or tackweed. Puncturevine is a prohibited and regulated noxious weed (Arizona Dept. of Ag.) that was introduced from Europe and when eaten in quantity is toxic to livestock, especially sheep. Plants usually have several stems of up to 3 feet long radiating from the root with opposite leaves each divided into 4 to 7 pairs of oblong leaflets $\frac{1}{8}$ - $\frac{1}{2}$ inch long. Stems and foliage often have silky or bristly silver hairs. Heavy infestations of this weed can form dense mats in disturbed habitats such as roadsides, waste areas and agricultural fields. The solitary bright yellow flowers have 5 petals (rarely 4) and occur on short stalks in the axils of leaves. The seedpods separate into wedge-shaped burs or nutlets, each with two stout spines $\frac{1}{8}$ - $\frac{1}{4}$ inch long that can puncture bicycle tires and shoes. Germination requires warm temperatures and seedlings emerge in early spring through summer often in flushes following increased soil moisture. Seedlings can produce a deep root system in a few weeks; flowers may be produced within 3 weeks of germination and burs within 6 weeks. Each plant produces innumerable burs and it is almost impossible to prevent mature burs from falling to the ground. The seeds remain viable for decades until there is sufficient moisture for germination.

Puncturevine populations or infestations can be managed by physically removing plants (and hopefully burs) followed by repeated cultivation or soil disturbance to prevent the establishment of germinating seeds. Postemergence and preemergence herbicides can be used to kill established plants and to greatly reduce the emergence of seedlings. Planting competitive vegetation may also help, but hand removal of puncturevine may then be required.

In most desert areas of Arizona, puncturevine populations are suppressed by two weevils that provide biological control of this species. A stem weevil (*Microlarinus lypriformis*) and a seed weevil (*Microlarinus lareynii*) were imported from Italy by USDA entomologists and released in Pima County, Arizona in the summer of 1961 along with releases in many other states. The weevils became widely established throughout the southwest and close inspection of plants often reveals the exit holes chewed in burs and stems by the adult weevils as they exit the plant. Both weevils overwinter as adults in surface debris and plant litter and in the shelter of adjacent

perennial plants. The weevils' life cycles typically start in June when the adult weevils emerge and lay eggs in seed pods and stems. Adult weevils continue to feed and lay eggs producing about a generation each month in the summer by attacking new plants and reinfesting older surviving plants. Puncturevine weevils can be introduced to new areas by moving infested plants or by purchasing and releasing commercially reared weevils. The two puncturevine weevils are usually mixed together when sold commercially (an internet or World Wide Web search will identify suppliers). Puncturevine will not be eradicated by the seed and stem weevils but the density of the weed is usually greatly reduced. Small numbers of puncturevine plants must survive to sustain the populations of weevils in a particular location.



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