PUNCTUREVINE
(*Tribulus terrestris*)

Description: Puncturevine, also referred to as goathead, bullhead, tackweed, Texas sandbur, or Mexican sandbur, is a member of the Zygophyllaceae or caltrop family. Puncturevine is a low trailing annual that can reach lengths of 1/2 to 5 feet. Stems of the plant are prostrate or somewhat ascending, mat forming and highly branched. Leaves are opposite, hairy, divided into 4 to 8 pairs of leaflets that are oval, and about 1/4 to1/2 inch in length. Flowers are bright yellow, 5 petaled, and 1/3 to 1/2 inch wide. Fruits consist of five sections that break into tack-like structures at maturity. These tack-like or bur structures are gray to yellowish-tan in color and have sharp, sometimes curving spines. Three to five seeds are formed within the fruit of the plant.

Puncturevine

Plant Images:

Puncturevine bur

Flower and leaves

Distribution and Habitat: Puncturevine is native to Europe and is now widely distributed throughout the United States. The plant can occur on various soil types, including poor or rich, dry or moist soils, sandy to clayey, and compacted soil. Pastures, cultivated fields, urban areas, waste areas, and along highways and road sides are sites where puncturevine can flourish.

Life History/Ecology: Puncturevine is a low-growing, taprooted perennial that reproduces solely through seed production. Seedlings generally emerge throughout late spring into early summer following a wet period, but may continue to germinate at low levels through October. Puncturevine flowering typically occurrs within three to four weeks after emergence as temperatures become favorable. Seeds may be produced as early as six weeks after emergence, but may require a ripening period of six months to a year before germinating. A single plant can produce from 200 to over 5,000 seeds per growing season. Seeds may remain viable for up to five years.

Puncturevine contains a photosensitizing agent that can poison sheep when they graze the plant.

History of Introduction: Puncturevine is native to Europe and Asia. The plant may have been introduced into the United States as a contaminant of sheep's wool that was imported from the Mediterranean region. Puncturevine is now widely distributed throughout the United States, and is highly invasive throughout the southwestern states. In North Dakota, puncturevine is not being tracked and no observations have been reported.

Effects of Invasion: Puncturevine is an aggressive species that has the potential to injure livestock and detour recreationists. Hard, spiny burs of the plant can cause injury to the mouths and digestive tracts of livestock. Hay and wool values can be reduced if contaminated with puncturevine burs. Large burs can also harm exposed feet and puncture bicycle tires. Puncturevine reduces plant biodivesity by quickly invading and crowding out desirable species. The plant can also be especially troublesome in horticultural crops such as asparagus, tree fruits, and grapes, because these crops do not shade the ground completely.

Control:
Management objectives for puncturevine control should involve periodic monitoring of populations and preventing seed production. Puncturevine only reproduces through seed production; therefore, monitoring infestations and being aware of seed dispersal where seeds can cling to animals, clothing, and vehicles are crucial when developing a management plan.

Mechanical - Hand pulling when soils are moist and vines are long enough to grab can effectively reduce small infestations of puncturevine. Mowing is not effective because of the low growth habit of the plant. Shallow cultivation and hoeing can reduce populations and limit spread of the plant if conducted prior to flowering and seed production. Cultivation should be repeated to prevent bur formation.

Chemical - A few herbicides are available for puncturevine control. Applying pre-emergent herbicides; trifluralin, chlorsulfuron, or dichlobenil in late winter will control germinating seeds of puncturevine. Glyphosate, imazapyr, dicamba and 2,4-D will also reduce infestations.

Contact your local county extension agent for recommended use rates, locations, and timing.

Biological - Biological control agents have been relatively successful for puncturevine control. The puncturevine seed weevil, *Microlarinus lareynii,* feeds on developing seeds of the plant and a puncturevine stem weevil, *Microlarinus lypriformis*, mines on the stems and roots. Both insects provide good control of the plant, but it may take several years to deplete the seed bank in the soil. These insects have not overwintered in many northern latitudes.

Puncturevine is generally not grazed by animals. Animals that graze upon and eat a bur of the plant may be injured.

References:

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Puncturevine photograph courtesy of University of Nevada Cooperative Extension Service.

Puncturevine bur and flower photographs courtesy of Virginia Tech Weed Guide.