



## Puncturevine Identification and Management

### Background Information

#### History and Impacts

Puncturevine (*Tribulus terrestris*) is also known as goathead. Puncturevine is native to southern Europe and Asia and is found throughout central Oregon. Its main weedy characteristic, as indicated by its name, are its spiky seedpods that can injure livestock, people, and pets when stepped on and can even puncture bicycle tires.

#### Habitat

Puncturevine is commonly found on disturbed sites, roadways, driveways, trails and parking areas, in overgrazed pastures, gardens and waste areas. Good soil moisture and warm temperatures are needed for germination, but after the plant is established it can tolerate dry soils due to its rapidly produced deep taproot. Seeds are primarily dormant in the first season, but may germinate the next spring. Seeds may remain viable in the soil for up to five years.



#### Identification

**Plant:** Puncturevine is a summer annual broadleaf that emerges as early as May and continue growth until frost. Plants generally grows low to the ground forming dense mats 2 to 5 feet in diameter.

**Leaves:** The hairy leaves are opposite each other and divided into four to eight pairs of leaflets that are also opposite each other.

**Stems:** Stems radiate out from a central point at the taproot.

**Flowers:** The yellow flowers produced in the leaf axils have 5 petals and are ½ inch wide. The flowers appear as quickly as 3 weeks after the seedlings emerge and flowering continues throughout the growing season.

**Seeds:** Following quick flowering, seeds are viable 1 to 2 weeks later however they usually stay dormant in the first year. Each fruit consists of 4 to 5 seed sections which at maturity break into hard nutlets with 2 sharp spines.

### **Reproduction and Spread**

As the seedpod matures, it turns gray or tan, gets very hard and breaks apart so that the individual spikes can stick into passing animals and tires where they are transported to new areas. The seeds are viable in the soil for 3 to 7 years. A typical puncturevine plant will produce 200 to 5,000 seeds during one growing season, depending on available soil moisture and other environmental factors. These seeds and those that did not germinate from previous seasons will contribute to the potential weed population the following year.



## **Control Information**

### **Integrated Pest Management**

Integrated Pest Management (IPM) involves selecting from a range of manual, mechanical, chemical, cultural and biological control methods to match the management requirements of a specific site. Management will require dedication over a number of years persistence is necessary. Plan to revisit the site to control plants that have survived or sprout after initial control efforts. Control practices should be selected to minimize soil disturbance which will avoid creating more opportunities for germination of weed seeds.

### **Early Detection and Prevention**

Early detection and prevention is the key to weed control. Whenever possible, control should be done before plants are flowering to prevent seed production. Due to the quick time between seed germination and flowering timing is especially critical for puncturevine. Learn to identify seedlings and survey areas often that are known areas of past infestation. Prevent plants from spreading away from existing populations by washing tools and boots and clean vehicles, equipment and animals that have been in infested areas.

### **Cultural, Manual & Mechanical**

Puncturevine can be effectively controlled by hand removal or by hoeing to cut the plant off at its taproot. Not all plants germinate at the same time so it is necessary to monitor the area and continue removing seedlings throughout the late spring and into the summer. Hand removal, hoeing, or cultivation should be initiated prior to flowering and seed production. Mowing is not an effective method of control since the plant grows low to the ground. Establishing competitive vegetation can help crowd out future seedlings.

### **Chemical**

While individual plants are easily controlled by pulling, larger populations may require treatment with herbicides. Products containing 2,4-D, dicamba (several selective herbicides) or glyphosate (several non-selective herbicides) are effective post emergence, once the plants have already sprouted. Repeated application may be necessary through the growing season. Chlorsulfuron (Telar) or trifluralin (Treflan, Preen) are effective pre-emergent herbicides before seedlings sprout.

Precautions: Herbicides should only be applied at the rates and for the site conditions and/or land usage specified on the label of the product being used. Follow all label directions, the label is the law. For your personal safety, at a minimum wear gloves, long sleeves, long pants, closed toe shoes, and appropriate eye protection. Follow label directions for any additional personal protection equipment needed.

### **Biological**

A seed weevil has been introduced as a control in Oregon however there effectiveness is limited and they are not cold hardy and therefore control will be limited in central Oregon.

## **Summary of Best Management Practices**

- Learn to identify seedlings when they are young before flowers and seeds form
- Pulling is effective, dispose of plants if flowers or seeds have formed
- Repeated visits to an infested sites will be required as seedlings continue to sprout through the growing season and for multiple years if plants are allowed to go to seed.

If you have any questions or need additional assistance, please contact Deschutes County at 541-322-7117 or visit our website at [www.deschutes.org/weeds](http://www.deschutes.org/weeds)

