PUNCTUREVINE, THE SCOURGE OF SUMMER

Few young girls and boys have experienced summer vacation without an encounter with the bicycle tire's greatest nemesis, Puncturevine. It begins as a small green patch in an otherwise dry span of ground, and grows to become an impenetrable barrier to those on two wheels or on two bare feet. The greatest fear of the barefoot bounders on a summer afternoon is to find oneself smack dab in the middle of a large patch of Puncturevine. Though one barely feels the pricks on the way in, the pain of many thousand caltrops will be felt as one slowly steps their way out. Puncturevine, AKA Caltrops ,Goat heads, and Mexican Sand Burs, are one of the greatest killjoys of the summer season, to the kids at play as well as biking enthusiasts' who spend many small fortunes on tubes and tires to thwart the vicious throngs of puncturing seed pods.

Those out to enjoy the summer are not the only ones who are impacted by the thorny invader. Farmers, ranchers and homeowners are all at war with this summer scourge, having field crops and barnyards and even front lawns being overrun by Puncturevine. Farmers particularly must battle to keep Puncturevine out of their fields. Puncturevine seeds attach to equipment tires or workers shoes and are spread from field to field. They can get mixed into hay to be bailed and carried off for marketing, or carried in irrigation ditches many miles into new crops and fields. Whichever way it happens Puncturevine seeds can spread great distances to sprout up in a barnyard or horse corral of an unsuspecting rancher or homeowner. Whether growing in agricultural fields or along ranch roadsides, in a backyard garden or along irrigation canals, the battle to rid ones property of Puncturevine is both time consuming and expensive, yet very necessary once the plant becomes established on your property.

DESCRIPTION

Puncturevine (*Tribulus terrestris* L) belongs to a small family of plants called Zygophyllaceae which consists of 285 species in 22 genera. It is a native of Asia and Europe but was spread to the Americas through contaminated sheep wool in the early 1800s and is now found throughout most of North America. Puncturevine is an annual, prostrate growing plant, often forming dense mats over large areas. The leaves are opposite and hairy, pinnately compound with 4 to 8 leaflets per leaf. The flowers are an attractive yellow with five petals, four sepals, and are 1/3 to 1/2 inch in diameter.

Leaves and Flowers of Puncturevine

Once the flower is pollinated by insects it begins to form a pale green seedpod. The seedpod soon dries and hardens, turns brown, and splits into five separate thorny sections each containing a seed. The sections are in a hard caltrop-like shape, in which, any way the section lay, one thorn is always pointing up, thus allowing it to pierce into anything that comes in contact with it. A Caltrop is a four spiked metal device used to deter vehicles and horses by being laid in a roadway, the spikes are arranged so that any three spikes will be pointing towards the ground, the forth will be pointing up to pierce a tire or a hoof. A single Puncturevine plants can measure up to 15 feet in diameter and produce 200 to 5000 seeds. Each seed section is ideally shaped for catching a ride with any animal, person or tire that happens along.

Puncturevine seed pods before and after splitting apart into caltrops.

Puncturevine germinates in the spring to early summer and quickly sends down a heavy taproot that picks up water for growth. This allows the plant to persist into the dry summer months without further water. It begins to flower within just a few weeks of germination and is producing flowers and seed throughout the summer. Puncturevine can not tolerate frost, but the seeds will over winter and begin to germinate when spring temperature and moisture allow.

IMPACT

Puncturevine seeds will not germinate the same year they are produced. They must overwinter before they become viable. If conditions are not right for sprouting, the seeds can lay in the soil for up to five years waiting for the right amounts of water, soil and weather to begin growth. The deep taproot of the plant allows it to compete with crops and other weeds for water and nutrients and the numerous thorny seeds help to prevent livestock from eating the young plants. The thorns have caused digestive problems in livestock that eat the plants and the plants themselves are toxic to sheep, causing swelling of the throat and lips, sensitivity to light and other symptoms. Nitrate poisoning is also a concern in livestock that feed on Puncturevine. The stems and leaves of Puncturevine contain nitrate toxins that if enough are consumed, poisoning can result, this is especially true of sheep and goats.

MANAGEMENT

The primary means of controlling Puncturevine is by the physical removal of plants before they go to seed. This means one must hoe, dig or chop plants before they start to bloom. If blooming and seed set have already begun, then one must take care to remove the plants and any seeds that might fall off. This method is very effective if the infestation is small and the seed bed has not been established.

In the case of larger infestations, herbicides may be needed to get the situation under control. If the Puncturevine is the only target plant or if any other plants in the area are expendable, then a general purpose herbicide such as glyphosate can be very effective in controlling the weed. In the case of Puncturevine in lawns or grasses, then a specific broadleaf herbicide can be used. Always follow the label directions on mixing and applying the herbicides. If in a large infestation that has already established a substantial seed bed, one could use a pre-emergent herbicide to prevent the seeds from sprouting, as well as other means of removal, but this method must be maintained for several years to completely exhaust the seed bed in the soil. Mulching, weed barrier, and shallow tilling can all be effective in fighting Puncturevine depending on the situation at hand.

There are two established biocontrol agents that have been relatively effective against Puncturevine, the Puncturevine Seed Weevil (*Microlarinus lareynii*), and the Puncturevine Stem Weevil (*Microlarinus lypriformis*) both of which are native to India and Europe. The weevils destroy the seeds and stems of the plants and with time they can substantially reduce the number of plants in an area. The problem with this method is that as the numbers of plants diminish, so does the number of weevils, then just a few plants can produce enough seed to re-infest the area and the weevil population cannot rebound as quickly. This results in the Puncturevine spreading and populating other areas where the weevils may not be present.

Puncturevine Stem Weevil

Puncturevine Seed Weevil

Several attempts dating back to 1993 have been made to introduce these two weevils in Shasta County, especially in the moister higher elevations of the county with only limited success. The weevils have overwintered in our county, but because of predation and other environmental conditions the populations of weevils quickly declined. Even those brought from Southeaster Colorado were not successful in getting established in our area.

When dealing with Puncturevine and working out an effective control method, it is often a good idea to solicit the advise of a licensed pest control advisor (PCA) in your area. They will know what methods of control or which herbicides are most effective for the

area in which you live and when control should be started. Often times, it is a job that is too large for the average homeowner, and professional help may be needed. Many commercial companies have weed control as their primary or subsidiary part of their business. This would negate the need for homeowners having to handle pesticides or the hard work of physical removal of the sometimes painful plants.

Remember, ignoring one or two Puncturevine plants at the side of your driveway or in your barnyard may not seem like a big deal at the moment, but in very little time you may have an expensive and exhausting problem in your battle to eliminate the bicycle tire's greatest nemesis, Puncturevine.

Article written by Jim Staggs