RECOGNITION AND CONTROL OF DYERS WOAD IN NEVADA

Jason Davison, Central Area Specialist

INTRODUCTION

Dyers woad is a noxious weed that is gaining a foothold in Nevada. It is currently known to be growing in Elko County; however, it may occur in other locations and early detection is critical in any control program.

Dyers woad is believed to have been imported by early colonist from Europe during the 1700’s. It was probably imported as a source of deep blue dye or as a medicinal plant. It has been used since pre-Christian times and is still cultivated today by traditional Dyers and herbalists.

Most land managers and users view dyers woad as an invasive, noxious weed that should be controlled. Since its introduction it has spread throughout much of the United States. It continues to spread rapidly through the Intermountain west displacing native plants and reducing wildlife and livestock forage on rangelands in eight western states. It is especially worrisome because it is able to invade healthy rangelands with or without disturbance. It can grow and thrive on a wide variety of sites.

RECOGNIZING DYERS WOAD

Dyers woad (Isatis tinctoria L.) can grow as a winter annual, a biennial or short-lived perennial. It is a member of the mustard family. It grows up to 4 feet tall, but is normally about 2 feet in height. The stems grow from a group of basil leaves and don’t branch until the very top of the plant. The stem leaves are longer than they are wide, clasp the stem and are blue-green in color. They have a prominent crème colored midrib growing from the base of the leaf to its’ tip. The leaves have smooth edges and no hair on them.
Dyers woad produces abundant bright yellow flowers growing densely above the leaves. The flowers are small (about ¼ inch across) and numerous. They have 4 petals that grow in groups at the end of numerous stems. Each flower produces one seedpod of about ¾ inches in length, which are formed as the flowers fade. The pods start out green but turn to a shiny black or deep purple color as the age. Several pods grow on each stem and each pod contains one seed.

Dyers woad begins growth in the fall as a small rosette of leaves. These rosette leaves have fine hairs growing and are widest near the tip. The stems grow from the middle of the rosette leaves and can grow up to 4 inches per day when conditions are right. It generally doesn't flower until the second year of its life. Flowering in spring or early summer, the bright yellow flowers are obvious and attractive to many observers. The black or purple pods are also very obvious in the early fall and help identify this plant.

**CONTROLLING DYERS WOAD**

Dyers woad has a deep thick taproot that can grow as long as five feet. It can resprout if it is cut off and reproduces easily from seed. Its rapid growth rate and wide adaptability make it a very effective competitor with all types of native vegetation. All of these factors make controlling dyers woad difficult.

**CONTROL METHODS**

**Prevention**

Preventing dyers woad from becoming established is the best control method of all. Vehicles, trains or infested hay, most often spread dyers woad. To prevent it from becoming established, closely watch roadways, railways and areas where hay is fed. Individual plants are easily controlled by the methods listed below. Immediate action is necessary to prevent the infestation from growing.

Competition from other desirable plants is important in slowing the spread of dyers woad. Proper management techniques that benefit desirable plants are the first step in a control program. If dyers woad has displaced all other desirable plants, reseeding with adapted species after control measures have been implemented may be necessary.

**Mechanical**

Hand pulling, digging chopping or grubbing can be effective on smaller populations. The taproot must be removed below the crown of the plant or it will resprout. Seedling rosettes are the easiest plants to control with this method. Because of the taproot produced by dyers woad, multiple treatments over several seasons will normally be required to eliminate this plant.
Biological

Biological control means using a living organism to control a targeted weed. Unfortunately no animal or insect has been discovered which seems to prefer dyers woad to other plants. However a naturally occurring fungus is showing some promise in controlling dyers woad. The fungus, a rust known as Puccinia thlaspeos damages the plant enough to provide substantial control while not infecting any other plant growing nearby. The rust normally spreads slowly but researchers in Utah are actually spraying it to increase the rate of infection. They dried and ground rust-infected dyers woad plants, which were mixed in a solution for spraying. This rust is especially promising in rugged, inaccessible areas or wilderness where herbicide sprays or mechanical means are impractical.

Chemical

Dyers woad can normally be controlled using a planned herbicide spray program. The herbicide selected will depend on several factors. These include cost, location, non-target plant species present, ability to respray and a host of others. Before using any herbicide read and understand the label directions. If you are unsure of any factor contact the retailer where the herbicide was purchased, or other individuals qualified to answer your question. Table 1 lists the recommended herbicides, application rates, and application timing for dyers woad control.

<table>
<thead>
<tr>
<th>Herbicide Rate/ac</th>
<th>When to Spray</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2, 4-D LV ester</td>
<td>Spring &amp; Fall to rosettes</td>
<td>Avoid drift to sensitive crops</td>
</tr>
<tr>
<td>2.0 lb ae</td>
<td>Early Summer in Bud stage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Both treatments may be necessary</td>
<td></td>
</tr>
<tr>
<td>chlorsulfuron</td>
<td>Pre to post emergence</td>
<td>non-cropland use only</td>
</tr>
<tr>
<td>(Telar) .75 to 2.25 oz</td>
<td>Best on young actively growing weeds</td>
<td>several other restrictions (apply)</td>
</tr>
<tr>
<td>(1 to 3 oz Telar)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>metsulfuron</td>
<td>preemergence to bloom stage in spring</td>
<td>Extremely long lasting in soil.</td>
</tr>
<tr>
<td>(Escort) .3 to .6 oz</td>
<td>Read crop rotation restrictions carefully</td>
<td></td>
</tr>
<tr>
<td>(.5 to 1 oz Escort)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RESOURCES


