

## **Management Methods: Prescribed Grazing**

### **GRAZING TIMING AND SPOTTED KNAPWEED**

#### **Slide 1: CASE STUDY**

Goats Control Spotted Knapweed Seed Production

#### **Slide 2: Target Species**

Spotted knapweed (*Centaurea maculosa*) is a biennial or long-lived perennial that reproduces entirely from seed. Native to Eurasia, spotted knapweed currently infests a wide range of environments on nearly 7 million acres in the United States. Seventy five percent of spotted knapweed infestations occur in western states (MT, ID, OR, WA).

#### **Slide 3: Purpose**

University of Idaho Extension Educator Shannon Williams and University of Idaho Weed Ecologist Tim Prather teamed up to study the effects of grazing goats at various spotted knapweed growth stages.

The researchers hoped to determine which grazing timing would have the greatest effect in reducing spotted knapweed cover, density, and seedhead production.

#### **Slide 4: Methods**

Treatments included grazing spotted knapweed at the following times:

1. Ungrazed
2. Rosette to bolt stage
3. Bud to bloom stage
4. Rosette to bolt AND seed set to fall rosette stage (grazed two times)

Five goats grazed for two to five days in 0.1-acre plots. Grazing was monitored and animals were removed when goats started to graze other vegetation.

Measurements of canopy cover, plant density, and seedhead density were taken in May of each year.

#### **Slide 5: Results 1**

##### **Observations**

**Managing Invasive Plants:** Concepts, Principles, and Practices

In the early grazed plots (treatment 2), goats grazed spotted knapweed from the stem down to the rosette, but did not graze rosettes.

In the late grazed plots (treatment 3), goats stripped the leaves from the stems and consumed rosettes.

In plots that were grazed two times (treatment 4), goats grazed from the stem down to the rosette during the first grazing, and consumed the seedhead and green leaf tissue in the second grazing.

**Slide 6: Results 2**

Grazing early in the season resulted in increased spotted knapweed cover and density compared to ungrazed plots and other treatments.

Late season grazing and grazing twice were effective in reducing spotted knapweed cover, but resulted in little change in plant density.

Seedhead production was significantly lower in all grazed plots compared to ungrazed plots.

**Slide 7: Conclusion**

This three year study determined that goats would consume spotted knapweed at various growth stages, and can effectively reduce the reproductive capacity of spotted knapweed.

**Slide 8: Reference**

Williams S, Prather T. 2006. Goats: A tool for controlling spotted knapweed. Journal of Extension 44(5). <<http://www.joe.org/joe/2006october/rb6.shtml>> Accessed 2006 Nov 2.