

## **Downy Brome Control in Perennial Grass during the 2006/2007 Growing Season.**

Robert Wilson

A field study was initiated near Mitchell, Nebraska to compare the effectiveness of various herbicides applied in late fall or late spring for downy brome control in range. The experimental design was a randomized complete block with three replications. Plots were 11 feet wide by 25 feet long and were located on a sandy loam soil with a pH of 8.0 and 2% organic matter. In late fall (October 19, 2006), downy brome was actively growing and 1 to 2 inches tall and perennial range grasses were dormant. In early spring (March 20, 2007), downy brome was 1 inch tall, yellow and showing signs of drought stress and perennial grasses were just breaking dormancy. Herbicides were applied with a backpack sprayer calibrated to deliver 20 gallons of water per acre at 36-psi pressure with Spraying Systems 11002 VS nozzles. Environmental conditions at the time of herbicide application are given in Table 1.

Downy brome density was fairly uniform throughout the plot. On April 30, 2007, downy brome control ranged from 57 to 87% from herbicides applied in the fall and 60 to 88% from the same treatments applied in the spring (Table 2). With fall applications of Olympus, the addition of UAN improved early season response of downy brome to Olympus. By the end of May, fall applications of Olympus were providing 90% or more downy brome control. Applying Olympus in early spring was not as effective as fall treatments for downy brome control. Plateau was also more effective for downy brome control when applied in the fall compared to the spring. Plateau caused more native grass injury than Olympus.

Summarizing data over three trials showed that fall applied Olympus provided 78% downy brome control compared to Plateau which provided 91% control (Table 3). Plateau and Olympus both provided similar downy brome control from spring treatments. Plateau caused more perennial grass injury than Olympus.

Table 1. Environmental Conditions at the Time of Herbicide Application.

| Date    | Air temperature<br>(F) | Humidity<br>(%) | Wind speed & direction<br>(mph) | Time of day | Crop growth stage                                       |
|---------|------------------------|-----------------|---------------------------------|-------------|---|
| June 11 | 76                     | 50              | 6 E                             | 8:30 am     | 1 to 2 inches tall and actively growing                 |
| June 18 | 60                     | 51              | 5 NW                            | 9:00 am     | 1 inch tall, yellow and showing signs of drought stress |

Rainfall before and following herbicide application:

| Date - 2006       | Amount       | Date - 2007  | Amount       |
|-------------------|--------------|--------------|--------------|
|                   | - (inches) - |              | - (inches) - |
| September 1 to 30 | 0.59         | April 1 to 3 | 0.87         |
| October 9         | 0.18         | May 3        | 0.26         |
| October 18        | 0.14         | May 5        | 0.29         |
| October 21        | 0.04         |              |              |

Table 2. Downy Brome Control in Perennial Range Grass at Mitchell, NE during the 2006/2007 Growing Season.

| Treatment <sup>1</sup> | Rate<br>(lb/acre) | Time of application <sup>2</sup> | Downy brome control <sup>3</sup> |      |      | Perennial grass injury <sup>3</sup> |
|------------------------|-------------------|----------------------------------|----------------------------------|------|------|-------------------------------------|
|                        |                   |                                  | 4/30                             | 5/18 | 5/29 | 5/29                                |
|                        |                   |                                  | ----- (%) -----                  |      |      |                                     |
| Nontreated             | —                 | —                                | 0                                | 0    | 0    | 0                                   |
| Olympus + X77          | 0.0534            | Fall                             | 57                               | 86   | 91   | 0                                   |
| Olympus + UAN + X77    | 0.0534            | Fall                             | 73                               | 80   | 93   | 0                                   |
| Plateau + X77          | 0.094             | Fall                             | 87                               | 88   | 93   | 8                                   |
| Olympus + Sencor + X77 | 0.0534 + 0.14     | Fall                             | 78                               | 99   | 98   | 0                                   |
| Olympus + X77          | 0.0534            | Spring                           | 60                               | 78   | 75   | 0                                   |
| Olympus + UAN + X77    | 0.0534            | Spring                           | 60                               | 88   | 87   | 0                                   |
| Plateau + X77          | 0.094             | Spring                           | 72                               | 88   | 88   | 8                                   |
| Olympus + Sencor + X77 | 0.0534 + 0.14     | Spring                           | 88                               | 93   | 95   | 0                                   |
| LSD at 5%              | —                 | —                                | 17                               | 21   | 13   | 6                                   |

<sup>1</sup> Spray additives were combined with herbicides at the following rates: surfactant X77 at 0.25% v/v and liquid nitrogen (UAN) 33-0-0 at 1 qt/acre.

<sup>2</sup> Herbicides were either applied on October 19, 2006 (Fall) or March 20, 2007 (Spring).

<sup>3</sup> Visual evaluations were made on a scale of 0 to 100 with 0 equal to no injury and 100 equal to death of the plant.

Table 3. Three Year summary of Olympus for Downy Brome Control in Rangeland at Mitchell and Melbeta, NE during the 2005 through 2007 Growing Seasons.

| Treatment     | Rate           | Time of application | Downy brome control |    |    |     | Perennial grass injury |    |    |     |
|---------------|----------------|---------------------|---------------------|----|----|-----|------------------------|----|----|-----|
|               |                |                     | 05                  | 06 | 07 | Avg | 05                     | 06 | 07 | Avg |
| Olympus + X77 | 0.053 (1.2 oz) | Fall                | 60                  | 83 | 91 | 78  | 0                      | 3  | 0  | 1   |
| Plateau + X77 | 0.094 (6 oz)   | Fall                | 82                  | 98 | 93 | 91  | 3                      | 12 | 8  | 8   |
| Olympus + X77 | 0.053 (1.2 oz) | Spring              | 57                  | 88 | 75 | 73  | 10                     | 2  | 0  | 4   |
| Plateau + X77 | 0.094 (6 oz)   | Spring              | 40                  | 89 | 88 | 72  | 12                     | 30 | 8  | 17  |