What You’ll Learn...

- Downy and Japanese brome grasses are winter annuals that can be problematic in wheat.
- Downy and Japanese brome can be difficult to distinguish.
- Management of downy and Japanese brome species requires an integrated approach utilizing multiple methods of management including cultural as well as chemical methods to maximize crop growth and minimize weed impact.

Weed control is essential for wheat quality and yield. Weed competition can reduce wheat yield potential and profitability.

Japanese and downy brome grasses are winter annual weeds that typically germinate in the fall, overwinter as small seedlings, and start growing again in the spring. They have a similar life cycle to winter wheat, but mature more rapidly and continue to grow at low temperatures even after winter wheat has gone dormant. This gives brome a competitive edge over wheat in the spring. Heavy infestations of downy brome can reduce yields by 30 to 80 percent.

Identification

Downy brome (Bromus tectorum L.) is known by a number of names including cheatgrass, cheatgrass brome, downy bromegrass, wild oats, and cheat. Downy brome may be called cheat, but cheat (Bromus secalinus L.) is actually a different weed. Japanese brome (Bromus japonicus) can easily be confused with downy brome but there are some distinguishing characteristics.

Japanese and downy brome grow to similar heights, but when plants produce heads and start to flower, identification becomes easier. At flowering, panicles are roughly the same size and architecture but the panicles of Japanese brome are less drooping than those of downy brome. The spikelets are more compact whereas those of downy brome are more open.

The awn on the seed of Japanese brome is equal or shorter in length than the seed and curls when mature. Conversely, the awn of downy brome is straight, distinctly longer than the seed, and grows straight out from the top of the seed.

Downy brome often expresses more purple color in both vegetative and mature growth stages and the seeds are reddish purple. Japanese brome typically stays green during vegetative stages and is tan when mature. The seeds of Japanese brome are also tan.

Management

Cultural Control. Because downy brome is a prolific seed producer, minimizing seed sources can be an effective preventative control strategy. Crop rotation is one of the most effective control measures for downy brome because of the relatively short life span of seed in the soil (2 to 3 years). The key aspect of crop rotation for management of downy brome is to prevent any new seed production for at least two years between winter wheat crops. During this time, the seed bank will decline significantly from germination, predation, and other forms of seed mortality.

Fallow Management. Germination and subsequent control of brome seedlings are critical to good fallow management. Tillage immediately after harvest helps stimulate germination. Downy brome seedlings can either be tilled again or controlled with herbicides, such as RT 3® Powered by Roundup Technology® Herbicide. During spring of the fallow year, it is important not to let any new brome seed production occur.

Fall and Spring Burndown. The focus of burndown applications prior to seeding spring wheat is to control small, emerged weeds that could reduce early-season yield potential and for which in-crop control options may be limited, less effective, and more costly (Table 1).

Figure 1. Downy brome.
brome and Japanese brome are grass species that are better controlled with early fall or early spring herbicide applications rather than late fall, late spring, or mid-season applications (Figure 2). A fall burndown application of 12 to 16 oz/acre of RT 3® Powered by Roundup Technology® Herbicide is especially important in no-till or fallow fields when populations of brome species are thick. A preplant burndown application of RT 3 at 24 oz/acre should be used in no-till systems to control brome species prior to planting. Brome species can be controlled with higher rates of propoxycarbazone in-crop. However, this long-residual ALS herbicide could injure growing spring wheat at high rates.²

**In-Season.** If downy brome emerges after wheat has been planted, herbicide applications should be made in the fall on small plants (preferably 2 leaf). Several herbicides are labeled for selective control or suppression of downy brome in winter wheat. Some of the most effective of these are Group 2 (ALS-inhibitors) herbicides. These provide excellent control when applied in the fall but are more inconsistent with spring applications. Imazamox is another Group 2 option for Clearfield® brand wheat products. However, ALS-resistant downy brome and Japanese brome have been documented. Group 2 herbicides should not be used repeatedly. Utilizing a burndown application prior to planting wheat can help clean up emerged brome grasses before planting, especially in fields where resistant biotypes are present.

**Sources:**


Other references used:


Web sources verified 08/28/2018.

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**Table 1. RT 3® Powered by Roundup Technology® Herbicide rate recommendations in no-till wheat for control of brome grass species.**

<table>
<thead>
<tr>
<th>Application Timing</th>
<th>Rate (oz/acre)</th>
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<tbody>
<tr>
<td>Fall Burndown</td>
<td>12 to 16</td>
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<tr>
<td>Spring Preplant</td>
<td>24</td>
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</tbody>
</table>

¹ This product may be used up to 44 oz/acre for tough-to-control annual weeds and where heavy weed densities exist. ² Performance is better if application is made before downy brome reaches boot stage of growth.

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This document is intended to provide information about this weed and guidelines for control. As a tough-to-control weed, knowledge about the biology and weed control programs will help in their management. For additional information, contact your local seed representative.

Roundup Technology® includes glyphosate-based herbicide technologies.

Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower’s fields.

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