



A SUPERIOR TOOL FOR LONG-TERM CONTROL OF **TOUGH THISTLE WEEDS**

overdrive[®]
herbicide

Professional
Vegetation
Management

 **BASF**

The Chemical Company

Overdrive® Herbicide

A Superior Tool for Long-term Control of Tough Thistle Weeds

Overdrive® herbicide is a postemergent herbicide for the control of annual, perennial and biennial broadleaf weeds in rangeland and other key noncrop areas. Because it provides fast, long-term control for tough broadleaf weeds, **Overdrive** is particularly well suited for cost-effective vegetation management strategies used to control aggressive annual, biennial and perennial thistle weeds — including Canada thistle, musk thistle, plumeless thistle, yellow starthistle, scotch thistle, teasel and sowthistle.

Compared to most other vegetation management products used for thistle control, **Overdrive** uses less active ingredient to provide greater broad-spectrum control of nuisance vegetation.

A Better Solution

Overdrive is a fast-acting, effective product that provides a wide spectrum of broadleaf weed control.

Because it can be applied in lower use rates than most products traditionally used to control tough thistle weeds, **Overdrive** helps reduce application costs and increase weed control effectiveness, while still providing long-term control of broadleaf weeds.

How Does **Overdrive** Work?

When applied to an undesirable annual or perennial broadleaf weed, **Overdrive** inhibits the plant's ability to spread auxins — naturally occurring hormones crucial to plant development and cell growth. The active ingredient in **Overdrive** collects in the plant's key growing points, such as the roots and areas where new shoots and stem growth initiate. This concentration at key growing points results in the plant's speedy decline. By mimicking auxins in the plant, **Overdrive** causes uncontrolled cell division and growth, which eventually destroys the plant.

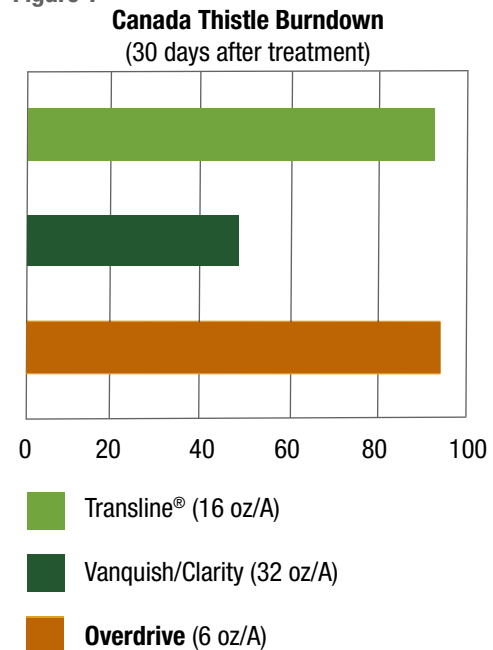
Because **Overdrive** concentrates in key growing points, less herbicide is required in weed control applications. Compared to other herbicides, a lower rate of **Overdrive** can be used to successfully control undesirable annual and perennial broadleaf weeds.

How Effective is **Overdrive® Herbicide** in Controlling Nuisance Thistles?

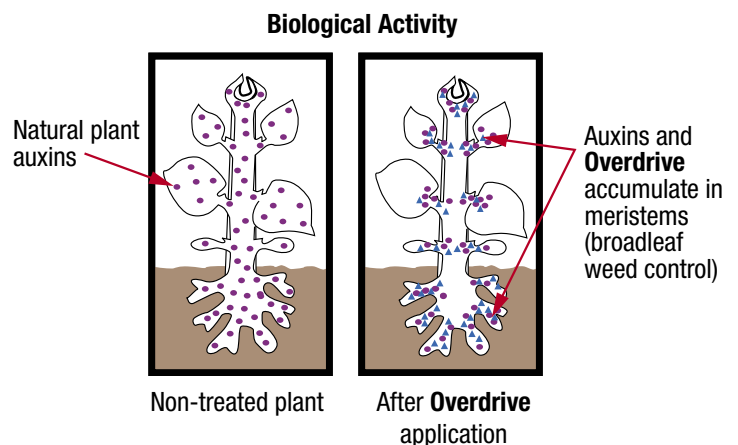
Studies show that **Overdrive** provides effective weed control. Research shows that, compared to commonly accepted application amounts for other products, a smaller application of **Overdrive** can provide long-term control that is equal to or more effective than other herbicides.

Researchers from the University of Wisconsin found that an application of just 6 ounces per acre of **Overdrive** controlled 94 percent of Canada thistle in the month following application, compared to a 32-ounce per acre application of Vanquish®/Clarity®, which controlled just 48 percent of Canada thistle one month after application (Figure 1).¹

Figure 1



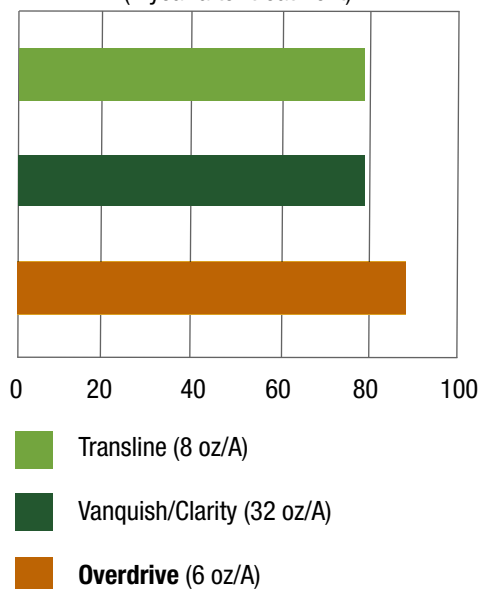
Source: Doll, J. University of Wisconsin, 2000



University of Wisconsin researchers also found that **Overdrive** maintained its effectiveness over the long term. In a comparison study conducted 10 months after application, **Overdrive** maintained a 94 percent reduction in Canada thistle, compared to 92 percent control of Vanquish/Clarity, which was applied in larger amounts (Figure 2).¹

Additional studies show that **Overdrive** is also very effective on biennial thistles, such as musk thistle and bull thistle. Data from test plots in Oklahoma and Virginia show that an application of 4 ounces per acre provided 100 percent control of musk thistle from 60 to 100 days after treatment. Applications were made to the test plots in early to mid-spring, so thistles were primarily in the rosette stage.

Figure 2
Canada Thistle Stand Reduction
(1 year after treatment)



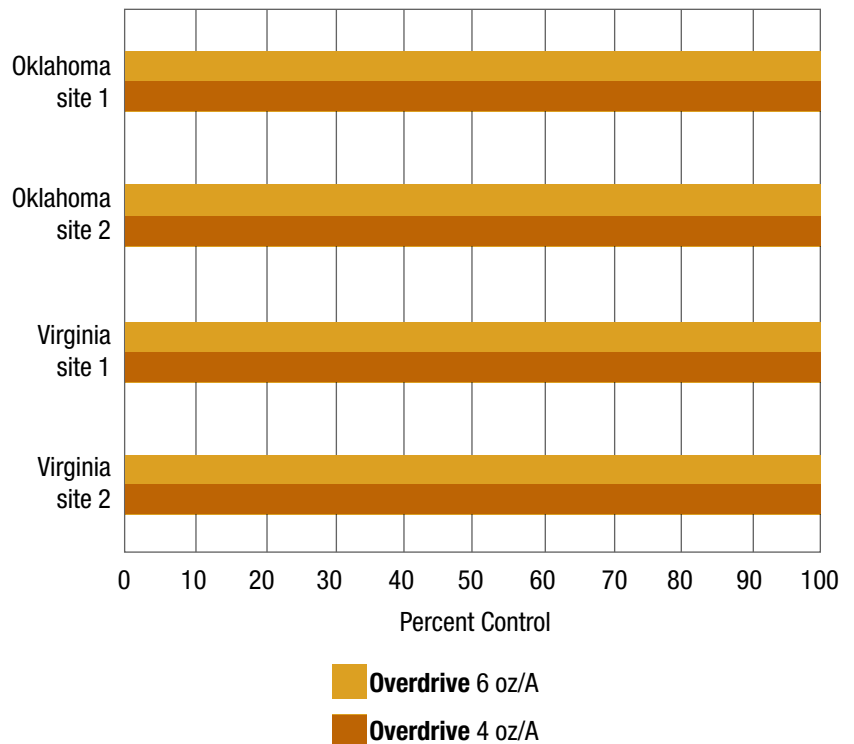
Source: Doll, J. University of Wisconsin, 2001



What Types of Thistle Can Overdrive Control?

Overdrive controls over 90 annuals and 50 biennial and perennial broadleaf weeds, including tough thistle species. Following is a sampling of some of the key thistle species that can be controlled using **Overdrive**:

Thistles	Overdrive Rate	Application Timing
Musk Thistle (<i>Carduus nutans</i>)	2 oz/A	Spring or fall rosette, Bolted/flowering plants
Plumeless Thistle (<i>Cirsium acanthoides</i>)	2 oz/A	Spring or fall rosette
Bull Thistle (<i>Cirsium vulgare</i>)	2 oz/A	Spring or fall rosette
Sowthistle, annual, spiny (<i>Sonchus asper</i>)	4 oz/A	Spring rosette
Canada Thistle (<i>Cirsium arvense</i>)	6 oz/A or 4 oz + 8 oz Tordon® or Transline	Spring/early summer
Yellow starthistle (<i>Centaurea solstitialis</i>)	4 oz/A	Spring rosette



Sources:
Virginia - Hipkins, L., Virginia Tech research report, August 2001.
Oklahoma - Cargill, L. Oklahoma State Univ. / BASF Research Trial.
Kansas - Fick, W. Kansas State Univ.

Overdrive® Herbicide

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How Is Overdrive® Herbicide Used in Thistle-Control Applications?

Because it provides excellent thistle and general broadleaf weed control, **Overdrive** is well suited for thistle-control applications. In general, two rates are recommended for thistle-control applications of **Overdrive**:

- For annual and biennial thistles, such as musk thistle, bull thistle and plumeless thistle, a rate of 2 ounces per acre in the rosette stage is sufficient; 4 ounces per acre is recommended for later stages.
- For perennial thistles, such as Canada thistle, a rate of 6 ounces per acre in the spring rosette stage is recommended. For thick infestations, 4 ounces per acre **Overdrive** plus 8 ounces per acre Tordon or Transline is recommended.

General Application Guidelines

Intended for use as a postemergent herbicide, **Overdrive** is usually applied in rates varying between 4 and 6 ounces per acre in thistle-control applications. In general, users may want to consider using the higher rate to control larger annual weeds or biennial and perennial weeds. No more than 10 ounces per acre should be applied per season.

Surfactant Recommendation

Two types of surfactants are recommended for use with **Overdrive** to improve the dispersing, spreading, sticking or wetting properties of the spray mixture. Which surfactant is right for a particular situation usually depends on the types of weeds being controlled and the area in which **Overdrive** is being applied:

- Non-ionic surfactant (NIS) – Standard recommendation is 0.25 percent v/v for use with standard broadleaf weeds.
- Methylated seed oil (MSO) – Standard recommendation is 1.5 - 2 pints per acre for mature perennials or larger weeds.

For more information about **Overdrive** or any of our vegetation management products, call your nearest BASF ProVM sales specialist at **1-800-545-9545**, or visit www.vmanswers.com.

¹ Tichich, R.P., and J.D. Doll (University of Wisconsin-Madison), "Herbicide options for Canada thistle control in pasture," Proceedings, North Central Weed Science Society (v) 56 (abst) 60, 2001.

Always read and follow label directions.

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Overdrive for Canada Thistle Control

- Apply at 6 oz/A + 0.25% non-ionic surfactant; use of a methylated seed oil may aid in uptake under dry conditions in spring/early summer applications up to bud stage
- **Overdrive** provides quick burndown and cost-effective control into the next growing season
- **Overdrive** is an excellent foundation for tank mixes
- Tank-mix options for Canada thistle (for both spring and fall applications):
 - **Overdrive** 4 oz/A + clopyralid (Transline®, Stinger®, Redeem®, Curtail®)
 - **Overdrive** 4 oz/A + picloram (Tordon®, Grazon P+D®)
- **Overdrive** also controls many other important broadleaf weeds including western ragweed, marehail, kochia, Russian thistle and prickly lettuce

Mixing Order

For best results, the following mixing order should be used:

- 1 | Add **Overdrive** to a clean, half-full tank with water.
- 2 | Allow sufficient time for **Overdrive** granules to saturate.
- 3 | Add surfactant, then add remaining water.
- 4 | Agitate once granules have saturated to complete the dissolving and mixing process.
- 5 | See label instructions for other tank-mix options.