Talinor herbicide delivers standalone control of tough broadleaf weeds in wheat and barley
Introducing Talinor Herbicide

Talinor™ herbicide is a robust post-emergence herbicide developed to control broadleaf weeds in wheat and barley. With its two active ingredients and two modes of action, this herbicide delivers excellent standalone control of difficult broadleaf weeds including those broadleaf weeds that have become resistant to ALS-inhibitor, synthetic auxin and glyphosate herbicides. Talinor helps protect yield and profit potential, while offering cereal growers the latest tool to help manage weed resistance.

Talinor Key Characteristics
- Controls more than 45 broadleaf weeds, including those that have become resistant to ALS-inhibitor, synthetic auxin and glyphosate herbicides
- Combines two active ingredients with two different modes of action for effective weed control
  - Bicyclopyrone inhibits the enzyme 4-hydroxyphenyl-pyruvate dioxygenase (HPPD-inhibitor, Group 27) and bromoxynil inhibits photosynthesis at photosystem II (PS II inhibitor, Group 6), leading to plant death in susceptible weeds
- Provides excellent tank-mix flexibility and is an ideal mix partner with Axial® brand herbicides for one-pass grass and broadleaf weed control
- Absorbed quickly through foliage for excellent rainfastness
- Offers a wide application window from the two-leaf stage to pre-boot stage of the crop
- Registered in winter wheat, spring wheat, durum and barley

Talinor Formulation Components
Talinor is a 1.77 lb/gal emulsifiable concentrate (EC) formulation comprised of two active ingredients, plus the safener cloquintocet-mexyl.

<table>
<thead>
<tr>
<th>Active Ingredient</th>
<th>lb/gal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicyclopyrone</td>
<td>0.31</td>
</tr>
<tr>
<td>Bromoxynil Acid Equivalent</td>
<td>1.46</td>
</tr>
</tbody>
</table>

Application Methods
Talinor can be applied by ground or aerial spray equipment. Use a minimum of 10 GPA by ground and 5 GPA by air.
Use Rate and Application Timing
For optimal weed control, apply Talinor at 13.7 to 18.2 fl. oz/A post-emergence to actively growing weeds. Early application will maximize crop yields by reducing weed competition. Target weeds should generally be at the 1 to 4 leaf stage or 2 to 4 inches tall/diameter at application, depending on species. Talinor must be applied with CoAct™ additive to deliver optimum performance. CoAct+ is conveniently packaged with Talinor in a dual-chamber jug. The dual-chamber jug ensures the precise rate of CoAct+ is delivered with the appropriate rate of Talinor. The table below indicates the rate of CoAct+ to be used in combination with the listed rates of Talinor.

<table>
<thead>
<tr>
<th>Talinor Rate (fl. oz/A)</th>
<th>CoAct+ Rate (fl. oz/A)</th>
<th>Acres Treated per Jug</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.7</td>
<td>2.75</td>
<td>20</td>
</tr>
<tr>
<td>16</td>
<td>3.2</td>
<td>17.2</td>
</tr>
<tr>
<td>18.2</td>
<td>3.6</td>
<td>15.1</td>
</tr>
</tbody>
</table>

Adjuvant Recommendations
Add a crop oil concentrate (COC) at 1% v/v of the finished spray volume. COC is the preferred adjuvant for Talinor. If COC is not available or a mixture partner does not allow COC, then a nonionic surfactant (NIS) may be substituted at 0.25% v/v of the finished spray volume. When Talinor is tank mixed with herbicides that have a built-in adjuvant, no additional COC or NIS is needed.
Talinor is an important tool for controlling troublesome broadleaf weeds, particularly those that have become resistant to ALS-inhibitor, synthetic auxin and glyphosate herbicides.

According to The International Survey of Herbicide Resistant Weeds, there are ALS-inhibitor resistant kochia, mayweed chamomile, and prickly lettuce; glyphosate resistant kochia; and synthetic auxin resistant prickly lettuce in U.S. cereal crops. Like other weeds, they compete with the crop for valuable sunlight, water and soil nutrients needed for robust development and strong yield. Talinor with its two modes of action provides effective control of these resistant weeds.

Talinor Broad Spectrum Weed Control

% Control

Weeds Controlled

- Bedstraw, catchweed
- Buckwheat, wild
- Canola, volunteer
- Catchfly, nightflowering
- Chickweed, common
- Chickweed, mouseear
- Cocklebur, common
- Dandelion*
- Deadnettle, purple*
- Fiddleneck, coast
- Field pennycress
- Flixweed
- Hawksbeard, narrowleaf*
- Hempnettle, common
- Henbit**
- Horseweed/marestail
- Kochia
- Ladysthumb
- Lambsquarters, common
- London rocket
- Mallow, venice
- Marshelder, annual
- Mayweed chamomile (dogfennel)
- Mustard, blue
- Mustard, tumble/Jim Hill mustard
- Mustard, wild
- Nightshade, black
- Nightshade, cutleaf
- Nightshade, eastern black
- Nightshade, hairy
- Pigweed, Palmer (Palmer amaranth)
- Pigweed, prostrate
- Pigweed, redroot
- Pigweed, smooth
- Plantain, buckhorn
- Prickly lettuce
- Puncturevine
- Radish, wild
- Ragweed, common
- Ragweed, giant
- Russian thistle
- Shepherd’s-purse
- Smartweed, Pennsylvania
- Sowthistle, annual
- Sunflower, common
- Tansymustard
- Thistle, Canada*
- Velvetleaf
- Waterhemp, common
- Waterhemp, tall

* Partial control.
** Application in spring wheat, durum or spring barley will provide control; application in winter wheat or winter barley will provide partial control.
Mayweed Chamomile Facts

• Annual bushy, ill-scented herb; also known as dog fennel or stinkweed
• Average plant size is capable of producing 5,000 to 17,000 seeds
• Germination takes place mainly in the fall and spring, but can occur throughout the year
• Seeds can remain 50 percent viable in soil for more than 11 years

Source: http://smallgrains.wsu.edu/mayweed-chamomile/

Kochia Facts

• An annual weed, reproducing by seed only
• If not controlled early, kochia can cause severe yield reduction (up to 60 percent)
• A single kochia plant is capable of producing up to 16,000 seeds that can spread by wind, water, equipment and by tumbling (tumble weeds)
• Kochia densities of 21 plants per square meter (sq. m.) can cause yield losses in wheat of approximately 33 percent, while extreme infestations of 195 plants per sq. m. have reduced wheat yields by up to 73 percent


Russian Thistle Facts

• Annual broadleaf weed
• A large plant may produce more than 200,000 seeds and can spread by tumbling (tumble weeds)
• Can reduce wheat yields by 20 to 48 percent
• Depletes soil moisture, interferes with tillage operations, and serves as a shelter or food source to many insects, vertebrate pests and crop diseases

Source: http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/crop1280

Wild Buckwheat Facts

• Annual weed
• Produces approximately 12,000 seeds per plant
• Particularly troublesome because of its climbing nature, which creates harvesting problems
• With five plants per sq. yd., yield losses of 12 percent in wheat can occur. With 30 plants per sq. yd., yield losses can jump to 22 percent

Source: https://www.extension.purdue.edu/extmedia/gwc/gwc-10-w.pdf
Crop Rotation Profile

Talinor has flexible crop rotation options. The following crops may be planted at the specified interval following a Talinor application.

<table>
<thead>
<tr>
<th>Rotational Crop</th>
<th>Plantback interval following a Talinor herbicide application at 13.7 fl. oz/A (months)</th>
<th>Plantback interval following a Talinor herbicide application at greater than 13.7 fl. oz/A (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfalfa</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Barley</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bean, black</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Bean, garbanzo (chickpea)</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Bean, great northern</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Bean, kidney</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Bean, lima</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Bean, navy</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Bean, pinto</td>
<td>9</td>
<td>10</td>
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<tr>
<td>Bean, succulent</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Bluegrass, Kentucky</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Canary seed</td>
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<td>3</td>
</tr>
<tr>
<td>Canola</td>
<td>9</td>
<td>10</td>
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<tr>
<td>Corn, field</td>
<td>Anytime</td>
<td>Anytime</td>
</tr>
<tr>
<td>Corn, pop</td>
<td>Anytime</td>
<td>Anytime</td>
</tr>
<tr>
<td>Corn, seed</td>
<td>Anytime</td>
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<td>Corn, sweet</td>
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<td>1</td>
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<tr>
<td>Cotton</td>
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<td>10</td>
</tr>
<tr>
<td>Flax</td>
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<td>9</td>
</tr>
<tr>
<td>Lentil</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Mustard</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Oat</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Onion</td>
<td>9</td>
<td>10</td>
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<td>Pea, field</td>
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<td>12</td>
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<td>Pea, garden</td>
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<td>12</td>
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<tr>
<td>Peanut</td>
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<td>10</td>
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<td>Potato</td>
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<tr>
<td>Rice</td>
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<tr>
<td>Rye</td>
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<tr>
<td>Sorghum</td>
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<tr>
<td>Soybean</td>
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<td>Sugarbeet</td>
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<td>Sunflower</td>
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<td>9</td>
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<tr>
<td>Timothy</td>
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<td>9</td>
</tr>
<tr>
<td>Triticale</td>
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<td>9</td>
</tr>
<tr>
<td>Wheat</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>All other crops not listed in this table</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

A 12 months in the North Dakota counties of Bottineau and Pierce and 15 months in the North Dakota counties of LaMoure and Rolette.
B 15 months in the North Dakota counties of LaMoure and Rolette.
C 12 months in the following Idaho counties of Latah and Lewis, and the North Dakota counties of Bottineau, Burke, Divide, Mountrail, Renville and Ward.
D 15 months in the following Idaho counties of Latah and Lewis, and the North Dakota counties of Bottineau, Burke, Divide, Mountrail, Renville and Ward.
E 12 months in the North Dakota county of Rolette.
F 10 months in Bottineau county, North Dakota and 12 months in Rolette county, North Dakota.

Tank-Mix Recommendations

Talinor may be tank mixed with other products to broaden the weed control spectrum. Tank-mix partners may be applied by the same method and timing required by the Talinor label unless otherwise specified by the label of the tank-mix partner. Refer to the Talinor label for additional tank-mix partner options.

- **Broadleaf Herbicide Tank-Mix Partners**
  - Amber®
  - Orion®
  - Peak®
  - Rave®

- **Grass Herbicide Tank-Mix Partners**
  - Axial® Star
  - Axial® XL
  - Discover® NG
  - Sierra™

- **Other Tank-Mix Partners**
  - Tilt® and Quilt Xcel® fungicides for early-season disease control
  - Warrior II with Zeon Technology® insecticide for insect control

Talinor applied at 13.7 fl. oz/A plus Axial Star 16.4 fl. oz/A with CoAct+ 2.75 fl. oz/A. Weeds present included kochia, lambsquarters and redroot pigweed. 24 days after treatment. Source: Syngenta trials. CO.
Protection Against Damaging Broadleaf Weeds in Cereals

Results from product development trials demonstrate Talinor delivers outstanding weed control compared to competitors such as WideMatch®, Huskie® and Affinity® TankMix herbicides.

Talinor Broadleaf Weed Control vs. Competitors

Talinor applied with 2.75 fl. oz/A CoAct® and 1% v/v COC; Huskie applied with 0.25% v/v NIS and +/- 1 lb/A AMS; WideMatch applied with +/- 0.25% v/v NIS. Weeds present included redroot pigweed, common ragweed, prickly lettuce, lambsquarters, kochia, hairy nightshade, wild buckwheat, Russian thistle, mayweed chamomile, common sunflower and coast fiddleneck. Weed control ratings recorded 27 to 43 days after treatment. Source: Syngenta and university trials.

Talinor vs. WideMatch Weed Control

Talinor applied with 2.75 fl. oz/A CoAct® and 1% v/v COC; WideMatch applied with +/- 0.25% v/v NIS. Weed control ratings recorded 27 to 56 days after treatment. N=number of trials. Source: Syngenta and university trials.
Herbicide Resistant Weed Management

Once herbicide resistance has been confirmed, it can remain in a population for decades. If growers wait until herbicide resistance is confirmed in their field, the ability to manage their weeds may become more difficult. Implementing a proactive approach helps combat herbicide resistance before it has the chance to impact an entire farming system.

- Employ integrated weed management practices
- Rotate herbicide modes of action
- Use multiple effective active ingredients
- Use the full recommended herbicide rate and proper application timing
- Scout fields after herbicide application to ensure control has been achieved
- Avoid allowing weeds to reproduce
- Monitor site and clean equipment between sites
- Start with a clean field and control weeds early
  - Burndown treatment
  - Tillage
  - Pre-emergence residual herbicide
  - Combination of the three, when appropriate
- Use cultural practices such as cultivation and crop rotation

For more information, visit www.SyngentaUS.com/Talinor.
For all the latest cereal news, visit SyngentaUS.com/Cereals.