DuPont™ Express®
herbicide
With TotalSol® soluble granules

Optimize the DuPont™ ExpressSun® trait system with Express® herbicide

Benefits of the ExpressSun® trait
Herbicide-tolerant sunflower hybrids can provide producers with technology to aid in the control of annual and perennial broadleaf weeds. High-yielding sunflower hybrids from Pioneer Hi-Bred include the DuPont™ ExpressSun® trait with built-in tolerance to tribenuron methyl, the active ingredient in DuPont™ Express® herbicide (with TotalSol® soluble granules). Express® research trials have demonstrated in-season control of Canada thistle and control of many other annual broadleaf weeds in conventional, minimum-till or no-till sunflower production systems.

The ExpressSun® trait system is designed to maximize weed control in sunflower crops, thereby enhancing production and yield. ExpressSun® combines herbicide tolerant sunflower seed with the Express® trait herbicide to provide improved weed control over conventional systems.

ExpressSun® trait development
Application of tribenuron methyl, the active ingredient in Express® herbicide (with TotalSol® soluble granules), to conventional (non-Express®-tolerant) sunflower will result in significant crop injury or plant death. In contrast, herbicide-tolerant sunflower hybrids with the ExpressSun® trait possess genetic tolerance to tribenuron methyl.

Pioneer has introduced herbicide-tolerant sunflowers with the ExpressSun® trait for the 2007 season, and will continue to develop new herbicide-tolerant hybrids for introduction in 2008 and beyond.

Unlike other herbicide-tolerant crops, such as Roundup Ready soybeans with the Roundup Ready gene, herbicide-tolerant sunflowers with the ExpressSun® trait were derived through traditional plant-breeding methods and are non-GMO products. Resistance to Express® herbicide has been bred into Pioneer’s elite sunflower germplasm.

Express® herbicide (with TotalSol® soluble granules):
- Is a member of the sulfonyleurea family of herbicides. The active ingredient is tribenuron methyl.
- Has been extensively used in wheat and barley for more than 14 years to control broadleaf weeds, and is effective in controlling Canada thistle.
- Dissolves completely into ions that are readily absorbed by weeds, resulting in more-consistent control over a wide variety of environmental conditions.
- Is formulated as a 50 percent active water-soluble granule.

Studies indicate that Express® herbicide (with TotalSol® soluble granules) presents a low risk to mammals, birds, fish and other nonplant wildlife when used in accordance with the label.

Stewardship
It is well-known that domestic sunflowers can readily outcross to wild sunflowers. To preserve the efficacy of the ExpressSun® trait, producers will be required to follow specific management practices designed to prevent or delay herbicide resistance in wild species of sunflowers. These practices span crops to promote herbicide resistance management.

- Always grow sunflower hybrids with the ExpressSun® trait as part of a multiyear rotation with other crops.
- Use non-ALS/AHAS (non-group 2) mode-of-action herbicides in a tank mix with ALS/AHAS herbicides, or as sequential treatments in the rotational crop, to control wild and volunteer sunflowers.
- Control wild sunflowers in non-crop areas adjacent to ExpressSun® trait sunflower fields through the use of non-ALS/AHAS herbicides and/or mowing prior to seed set.
Use tillage to control emerged wild sunflowers prior to planting hybrids with the DuPont™ ExpressSun® trait, or by utilizing non-ALS/AHAS burndown herbicides, or use ALS/AHAS burndown herbicides in a tank mix with non-ALS/AHAS herbicides to provide control of sunflowers.

As practical, use ALS/AHAS herbicides in a tank mix with non-ALS/AHAS (non-group 2) mode-of-action herbicides or use ALS/AHAS herbicides, in a sequential program that employs alternate modes of action to control wild and volunteer sunflowers.

DuPont™ Express® herbicide (with TotalSol® soluble granules)

Rate and timing
- Postemergence: ¼ to ½ ounce per acre. Do not exceed 1 ounce per acre per use season.

Adjuvant
- Methylated seed oil at a rate of 1 gallon per 100 gallons of spray solution.

Application method postemergence
- Applying DuPont™ Express® herbicide (with TotalSol® soluble granules) using a minimum spray volume of 5 gallons by ground or 2 gallons by air provided good weed control.

Condensed list of broadleaf weeds controlled or suppressed

<table>
<thead>
<tr>
<th>Weed</th>
<th>Control Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buckwheat, wild*</td>
<td>Nightshade, hairy*</td>
</tr>
<tr>
<td>Chamomile, mayweed</td>
<td>Pennycress, field</td>
</tr>
<tr>
<td>Chamomile, wild</td>
<td>Pineapple-weed</td>
</tr>
<tr>
<td>Chickweed, common</td>
<td>Pigweed: redroot, tumble</td>
</tr>
<tr>
<td>Falseflax, smallseed</td>
<td>Puncturevine</td>
</tr>
<tr>
<td>Flixweed</td>
<td>Purslane, common</td>
</tr>
<tr>
<td>Kochia**</td>
<td>Shepherd’s-purse</td>
</tr>
<tr>
<td>Lambsquarters: common, slimleaf</td>
<td>Smartweed, Pennsylvania*</td>
</tr>
<tr>
<td>Lettuce, miner’s</td>
<td>Sowthistle, annual*</td>
</tr>
<tr>
<td>Lettuce, prickly**</td>
<td>Tansymustard</td>
</tr>
<tr>
<td>Marshelder</td>
<td>Thistle: Canada, Russian**</td>
</tr>
<tr>
<td>Mustard: black, blue (purple</td>
<td>Vetch*: common, hairy</td>
</tr>
<tr>
<td>mustard), wild</td>
<td>Wallflower, bushy (treacle mustard)</td>
</tr>
</tbody>
</table>

* Partially controlled weeds exhibit a visual reduction in numbers as well as a significant loss of vigor.
** Resistant biotypes were not always adequately controlled.

Application timing
- Apply Express® from the one-leaf stage up to (but not including) bud formation.
- Depending on environmental conditions, a second application may be needed 14 or more days after the first application.
- Do not apply within 70 days of sunflower harvest.