igrowth® is the first commercially available non-GMO, herbicide-tolerant innovation for grain and forage sorghum in the world. The technology allows for pre- or post-emergent control of broadleaf and grass weeds using the UPL companion herbicide IMIFLEX™ (imazamox), the only imazamox herbicide registered for use with igrowth.

Together, igrowth hybrids and IMIFLEX herbicide create a groundbreaking system that controls Texas panicum, foxtail and a variety of tough weeds so you can improve your productivity, boost your return on investment and grow like never before.

Discovered by Advanta Seeds in 2007, igrowth technology has been successfully introduced in Argentina, Australia and now the United States. Alta Seeds, the premium seed brand of Advanta, is continuing to grow this technology with new products, including forage sorghums like ADV F8484IG, a member of the EMPYR™ Premier Forages line of top-performing forage sorghum hybrids.
igrowth Geography

Igrowth hybrids are well-adapted to the broad U.S. sorghum growing areas to provide flexibility for growers. The igrowth varieties offer weed control benefits that will appeal to growers of both high- and low-input acres. Additional hybrids are in development. See hybrid overviews in this guide for the geography where each is best suited.

Non-GMO

Igrowth is a non-GMO product. There was no insertion of DNA from other species or plants into the sorghum genome. igrowth is a naturally occurring tolerance found by genetic screening of many germplasm lines and has global market acceptance with no export or other restrictions.

Purchasing igrowth

Growers wanting to purchase igrowth seed for the upcoming growing season will need to register and sign the igrowth WEED CONTROL SORGHUM GROWER AGREEMENT at AgCelerate.com. Then, visit SorghumPotential.com to reach a representative about purchasing igrowth and IMIFLEX herbicide for your operation. Alta Seeds will provide registered igrowth users with additional stewardship documents in the future.
<table>
<thead>
<tr>
<th>HYBRID</th>
<th>TYPE</th>
<th>BMR-6</th>
<th>TRAITS</th>
<th>EARLY SEASON SILEAGE</th>
<th>MID-SEASON SILEAGE</th>
<th>FULL SEASON SILEAGE</th>
<th>SINGLE CUT, GRAZE REGROWTH</th>
<th>DOUBLE CROP</th>
<th>MULTIPLE CUTS</th>
<th>SINGLE CUT, HIGH YIELD</th>
<th>MULTIPLE CUT, RAPID DRY-DOWN</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADV F8484IG</td>
<td>Forage Sorghum</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**Characteristics**

<table>
<thead>
<tr>
<th>Relative Maturity</th>
<th>Yield for Maturity</th>
<th>Grain Color</th>
<th>Head Type</th>
<th>Approx Seeds per Bag</th>
<th>Plant Height</th>
<th>Head Exertion</th>
<th>Plant Uniformity</th>
<th>Plant Color</th>
<th>Seedling Vigor</th>
<th>Root Lodging</th>
<th>Drought Tolerance</th>
<th>Test Weight</th>
<th>Threshability</th>
<th>Sugarcane Aphid*</th>
<th>Tough Dryland</th>
<th>High Yield Dryland</th>
<th>Limited Irrigation</th>
<th>Full Irrigation</th>
<th>Early Planting/ Cold Soils</th>
<th>Poorly Drained Soils</th>
<th>No-Till</th>
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<tbody>
<tr>
<td>ADV G1120IG</td>
<td>M/E</td>
<td>2</td>
<td>RED</td>
<td>S/C</td>
<td>600K</td>
<td>45–55”</td>
<td>3</td>
<td>2</td>
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<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>MT</td>
<td>HS</td>
<td>S</td>
<td>S</td>
<td>MA</td>
<td>MA</td>
<td>MA</td>
<td>MA</td>
</tr>
<tr>
<td>ADV G2132IG</td>
<td>MED</td>
<td>2</td>
<td>RED</td>
<td>S/C</td>
<td>600K</td>
<td>45–55”</td>
<td>3</td>
<td>2</td>
<td>PPL</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>MT</td>
<td>HS</td>
<td>S</td>
<td>HS</td>
<td>S</td>
<td>MA</td>
<td>MA</td>
<td>MA</td>
</tr>
<tr>
<td>ADV G2168IG</td>
<td>M/E</td>
<td>2</td>
<td>RED</td>
<td>S/C</td>
<td>600K</td>
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<td>2</td>
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<td>HS</td>
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<tr>
<td>ADV G2193IG</td>
<td>MED</td>
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<td>S/O</td>
<td>600K</td>
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<td>PPL</td>
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<td>3</td>
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<td>2</td>
<td>HT</td>
<td>HS</td>
<td>HS</td>
<td>HS</td>
<td>S</td>
<td>MA</td>
<td>MA</td>
<td>MA</td>
</tr>
</tbody>
</table>

**Trait Ratings Scale**

1 = Excellent 10 = Poor

**Crop Use & Adaptation Key**

M/E = Medium-Early  
M/L = Medium-Late  
MED = Medium  
S/O = Semi-Open  
S/C = Semi-Compact  
HS = Highly Suitable  
S = Suitable  
X = Poor Suitability  
MA = Manage Appropriately  
HT = High Tolerance  
MT = Medium Tolerance

*Sugarcane aphid tolerance rating conducted by the Agricultural Research Division of the USDA.*

**Nitrogen Fertilization Recommendation:** 1 to 1.25 lbs N per growing day

**BD = Brachytic Dwarf**
MEDIUM-EARLY RED GRAIN SORGHUM

DESCRIPTION

» Drought-hardy producer
» Great head exertion for efficient harvest
» Responds to rainfall and irrigation
» Travels into western environments

RECOMMENDED SEEDING RATES

Seeding rates may vary depending on local growing conditions. Please see your Alta Seeds retailer for local recommendations.

FIELD POSITIONING

RATINGS

YIELD FOR MATURITY
HEAD EXERTION
PLANT UNIFORMITY
SEEDLING VIGOR
ROOT LODGING
DROUGHT TOLERANCE
TEST WEIGHT
THRESHABILITY

TOUGH DRYLAND
HIGH YIELD DRYLAND
LIMITED IRRIGATION
FULL IRRIGATION

<table>
<thead>
<tr>
<th>TOOL</th>
<th>TOUGH DRYLAND</th>
<th>HIGH YIELD DRYLAND</th>
<th>LIMITED IRRIGATION</th>
<th>FULL IRRIGATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hs</td>
<td>S</td>
<td>Hs</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>Ma</td>
<td>Hs</td>
<td>Ma</td>
<td>Ma</td>
<td>Mt</td>
</tr>
</tbody>
</table>

Hs = Highly Suitable  S = Suitable  Ma = Manage Appropriately  Mt = Medium Tolerance  X = Poor Suitability

Ht = High Tolerance
Mt = Medium Tolerance

Based on Alta Seeds research trials relative to other Alta Seeds products.
MEDIUM RED GRAIN SORGHUM

DESCRIPTION

» High top-end yield potential
» Superior drought tolerance
» Responds to rainfall and irrigation
» Head exertion for efficient harvest

RECOMMENDED SEEDING RATES

Seeding rates may vary depending on local growing conditions. Please see your Alta Seeds retailer for local recommendations.

FIELD POSITIONING

TOUGH DRYLAND

<table>
<thead>
<tr>
<th>YIELD FOR MATURITY</th>
<th>HEAD EXERTION</th>
<th>PLANT UNIFORMITY</th>
<th>SEEDLING VIGOR</th>
<th>ROOT LODGING</th>
<th>DROUGHT TOLERANCE</th>
<th>TEST WEIGHT</th>
<th>THRESHABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poorest 10-9-8-7-6-5</td>
<td>4</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Excellent 3-2-1</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
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Based on Alta Seeds research trials relative to other Alta Seeds products.
MEDIUM RED GRAIN SORGHUM

DESCRIPTION

» Combining Aphix elite SCA tolerance and igrowth
» High top-end yield potential
» Superior drought tolerance
» Responds to rainfall and irrigation
» Head exertion for efficient harvest

RECOMMENDED SEEDING RATES

Seeding rates may vary depending on local growing conditions. Please see your Alta Seeds retailer for local recommendations.

FIELD POSITIONING

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<td>Hs</td>
<td>S</td>
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<tr>
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<td>NO-TILL</td>
<td>POORLY DRAINED SOILS</td>
<td>SUGARCANE APHID</td>
</tr>
<tr>
<td>Ma</td>
<td>Hs</td>
<td>Ma</td>
<td></td>
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Ht = High Tolerance  Mt = Medium Tolerance

Based on Alta Seeds research trials relative to other Alta Seeds products.

Observed suitability and field-by-field positioning.
MEDIUM RED GRAIN SORGHUM

DESCRIPTION

- Good aphid tolerance
- Strong yield performance
- Ideal for rainfed production
- Strong disease ratings
- Good uniformity

RECOMMENDED SEEDING RATES

Seeding rates may vary depending on local growing conditions. Please see your Alta Seeds retailer for local recommendations.

FIELD POSITIONING

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<tr>
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<td>Ma</td>
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<td>Ht</td>
</tr>
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Based on Alta Seeds research trials relative to other Alta Seeds products.
The world’s first herbicide-tolerant, non-GMO forage sorghum, ADV F8484IG is a revolutionary hybrid that contains the high-performing genetics of EMPYR™ Premier Forages along with non-GMO igrowth technology. With the addition of igrowth, you can now apply IMIFLEX herbicide, the companion herbicide from UPL, pre- or post-emergence to get the best return on your crop input investment.

» High-tonnage forage sorghum, providing an average 2-ton advantage over the nearest competitor by 5-10% in all environments

» The first and only non-GMO forage sorghum hybrid with herbicide tolerance

» Strong, healthy plant with excellent disease resistance

» Contains the brachytic dwarf trait for high leaf-to-stalk ratios, prolific tillering, superior standability and comparable tonnage to normal-height sorghums
Ideal selection for producers looking for next-generation technology and superior yield potential. Conventional midrib with brachytic dwarf characteristic brings great standability and harvest performance for those looking to feed silage. igrowth non-GMO, herbicide-tolerant technology allows for a clean stand establishment for maximum early season growth and weed suppression.

» Strong-yielding hybrid with excellent season-long standability
» igrowth herbicide tolerance provides first-ever grass weed control
» Strong agronomics for those looking to push production with new technology

Based on Alta Seeds research trials relative to other Alta Seeds products.
Sorghum growers now have an easy way to get the most value from their sorghum acres. IMIFLEX® herbicide is the only IMI herbicide certified for use in the innovative, non-GMO igrowth® sorghum production system. Broad-spectrum and residual IMIFLEX herbicide controls even the toughest grass and broadleaf weeds in igrowth sorghum, helping realize the full potential of your sorghum acres. IMIFLEX herbicide is also flexible, as it can be used pre- or post-emergence in conservation and in conventional tillage production systems.

IMIFLEX Herbicide Product Benefits

» Broad-spectrum systemic herbicide for use in sorghum containing the Alta Seeds® igrowth® tolerance technology.

» Excellent crop safety with igrowth sorghum.

» Consistent performance across geographical regions.

» Flexible application timing can be used pre- or post-emergence.

» Long-lasting control of hard-to-kill grassy weeds including Texas panicum, crabgrass and foxtail.

» Compatibility with traditional sorghum herbicide programs.

» 0-day pre-harvest interval and no grazing or feed restrictions.
As a grower, your needs are ever-evolving. And our team is constantly innovating and improving our hybrid lineup to meet those needs.

With options to maximize your season even in the toughest conditions, Alta Seeds develops hybrids with one mission in mind:

TO HELP YOU GROW YOUR SUCCESS.