Alta seeds by ADVANTA

SEED GUIDE 2024

GRAIN SORGHUM | FORAGE SORGHUM | SUDANGRASS | CORN

ADVANTA SEEDS

We are leading the way in **Sorghum** with passion and commitment ...

Advanta is the world's leading sorghum seed company at the forefront of developing germplasms tailored to answer the need for climate-smart and high nutrition crops.

Advanta focuses on industry leading innovation and value added solutions; tackling disease, pest and herbicide resistance along with drought tolerance, to provide you with germplasm that is tailored to your field conditions. By creating seeds that make crops climate smart, and drought resilient, we are weatherproofing farm yields in various regions of the world.

Our wide portfolio boasts of high-performing grain and forage sorghum hybrids. Our groundbreaking technologies ensure we deliver great results in all growing conditions.

VISION A single **seed** holds within itself the power to **change the future of this planet**. Our aim is to protect the circle of life that begins with a seed. And contribute to the larger good of the world while doing so.

MISSION With sustainable actions create seed technologies that fight climate change, add value to farmer lives and enhance nutrition for the world.

Advanta delivers state-of-the-art Sorghum genetics to over 50 countries ...

From Australia to Argentina and US, we are helping farmers improve productivity and profits through Sorghum applications. We strive to provide superior genetics to improve yield. With our long history of research in sorghum genetics and experience in many geographies and varieties of sorghum, Advanta boasts one of the widest and most diversified forage and grain sorghum portfolio.

Our carefully developed, high-performing hybrids are designed to meet your individual challenges. From the full lineup of grain and forage sorghum to sorghum-sudan, sudangrass and pearl millet, our portfolio offers top-producing seeds with cutting-edge characteristics — all to enhance and streamline your operation from planting to harvest. In the groundbreaking Global Biotechnology Center in Texas and across the world, our breeders are setting the standards for herbicide tolerance, seed treatments and aphid, drought and other stress tolerance while developing new solutions to tackle tough challenges on your farm.

Our global pipeline allows us to more efficiently meet your needs, and our team of sorghum experts are always at the ready to offer assistance and help you make the best choices for your acreage and environment. With a wide range of products to suit the needs of a variety of growers, Alta Seeds can help you realize the full potential of your sorghum acres. igrowth®, the world's first commercially available herbicide-tolerant non-GMO technology specifically designed for grain and forage sorghum, is designed to pair with the powerful companion herbicide IMIFLEX™ from UPL to set your sorghum up for success. We also offer Aphix™ elite sugarcane aphid tolerance, Vertix™ seed treatments and a line of top-performing hybrids that include the world's first herbicide-tolerant forage sorghum.

Regardless of your needs, our products offer an array of traits that give you the flexibility to choose just the variety to suit your growing environment — and make the most of your seed investment.

GRAIN

Sorghum

GRAIN SORGHUM

A cutting edge, climate-smart **super crop**

ADV **G3127**

ADV **G2165**

ADV **G1329**

ADV **G2193IG**

Sorghum is one the most efficient crops in conversion of solar energy and use of water, and is known as a high-energy, drought-tolerant, resource-conserving grain.

Characteristics

1 | Efficient Water Use

Thanks to its CO2 absorption mechanism and complex root system, sorghum extracts and uses water and nutrients from the soil more efficiently than other crops. It can adapt to heat and drought, requiring 30% less water than other grains.

2 | Soil Fertility & Disease Management

Sorghum utilizes nutrients very efficiently and responds well to nutrient applications. Soil testing will allow for accurate allocation of inputs especially in higher yielding environments. Compared to other crops, exposer to diseases and pests are reduced thus limiting pesticide applications.

3 | Soil Health

Through improved soil health, Sorghum increases organic matter, recycles nutrients, captures and retains moisture and reduces soil erosion.

4 | Reduced carbon footprint

Through no-tillage practices, sorghum can help reduce your carbon footprint and better utilize your nitrogen use. With lower overall input costs, and the ability to thrive in dry conditions with limited to no irrigation, sorghum is a highly sustainable and durable crop.

GRAIN

Sorghum

Bringing the best to grain sorghum seed

Our best-in-class grain sorghum seeds feature traits ranging from drought tolerance to enhanced standability. And with industry-leading innovations like Aphix™ elite sugarcane aphid tolerance, Vertix™ sorghum seed treatments and igrowth® non-GMO herbicide tolerance, it's clear that no one is doing more to elevate sorghum to its rightful position in modern agriculture than Alta Seeds.

HYBRID	★ ADV G3127	★ ADV G2165	★ ADV G1329	AG1203	ADV G2168IG	★ ADV G2193IG	AG1301	ADV G1120IG
KEY MESSAGES	Exceptional yield potiental.	Consistently performs in tough conditions while responding well to irrigation.	Elite drought tolerance for any dryland acre.	Widely adapted for the Great Plains and Texas.	Top-end yield potential with the flexibility of igrowth® and security of sugarcane aphid tolerance.	Medium maturing hybrid that combines Aphix SCA tolerance and igrowth® herbicide technology.	Widely adapted for the Texas Panhandle and Great Plains.	Combines igrowth® herbicide technology and drought hardiness.
	A great option for South Texas.	Aphix hybrid possessing strong agronomics and top-tier yield potential.	Excellent standability that will perform on high pH soils.	Outstanding yield potential for its maturity.	It exceeds in dryland situations but also responds to increased rainfall or irrigation.	Delivers elite yield performance with the flexibility of igrowth® and the security of sugarcane aphid tolerance.	Excellent staygreen and performs well in dryland conditions.	Good response to rainfall and irrigation.
	Possesses a dark red grain color and exceptional plant health and disease tolerance.	Excelling performance from South Texas to Kansas.	As an Aphix hybrid it also demonstrates high levels of sugarcane aphid tolerance.	Its wide adaptableness makes it a great option in shorter season markets and replant scenarios in South Texas.	Superior drought tolerance and good head exetrion for efficient harvest.	Its maturity makes it good companion to other igrowth® hybrids in the portfolio.	Performs well in dryland conditions and responds favorably to irrigation.	Performs well in dryland conditions and responds favorably to irrigation.
			Very suitable from the Texas Panhandle to the Dakotas.	Excellent drought tolerance.				
TECHNOLOGY		aphix™	aphix™	aphix™	igrowth™ aphix™	igrowth™ aphix™	aphix™	igrowth™
RELATIVE MATURITY	MEDIUM	MEDIUM	EARLY	MEDIUM-EARLY	MEDIUM-EARLY	MEDIUM	MEDIUM-EARLY	MEDIUM-EARLY
GRAIN COLOR	RED	RED	CREAM	BRONZE	RED	RED	CREAM	RED
PLANT HEIGHT	38-47	38-46	30-36	34-40	38-44	40-48	40-46	45-55
SCA TOLERANCE	NO	YES	YES	YES	YES	YES	YES	NO
HEAD EXCERSION	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
HEAD TYPE	SEMI-OPEN	OPEN	SEMI-OPEN	SEMI-OPEN	SEMI-COMPACT	SEMI-OPEN	SEMI-COMPACT	SEMI-COMPACT
ROOT LODGING	EXCELLENT	EXCELLENT	EXCELLENT	VERY GOOD	GOOD	GOOD	EXCELLENT	GOOD
DROUGHT TOLERANCE	VERY GOOD	VERY GOOD	EXCELLENT	VERY GOOD	GOOD	GOOD	VERY GOOD	VERY GOOD
THRESHABILITY	EXCELLENT	EXCELLENT	VERY GOOD	VERY GOOD	VERY GOOD	VERY GOOD	VERY GOOD	VERY GOOD

FORAGE
Sorghum

FORAGE SORGHUM

World-class lineup of forage sorghum hybrids ...

ADV **F8322**

ADV **F8484**

ADV **F7232**

Alta Seeds offers a wide variety of forage sorghum hybrids that deliver high tonnage, digestibility and quality. Choose from a number of traits that enhance feed qualities, from BMR-6 to brachytic dwarf to dry stalk and photoperiod sensitivity.

Our forage sorghum hybrids also offer a cost-effective alternative to corn silage. With lower overall input costs and the ability to thrive in dry climates with little or no irrigation, these hybrids are the ideal and economical way to replace corn silage in your operation. Alta Seeds offers a world-class lineup of forages that consistently outperform their peers.

EMPYR Premier Forages are our top of-the-line hybrids that offer the best feed qualities along with excellent standability and climate versatility. Choose from this exclusive product line to see the best possible results both in your field and in your feed.

Our Technologies

BMR

BMR equals maximum forage Sorghum returns. It's the most advanced technology in forage sorghum hybrid for fortified nutrition in beef cattle. It offers increased quality and digestibility, supporting more weight gain in the animals. Delivering more energy per pound, while also improving milk production.

Photoperiod Sensitivity (PS)

Photoperiod Sensitivity (PS) is an innovative technology that opens a wider production window for growers. Photoperiod Sensitive Sorghum remains vegetative until day lengths become less than 12.5 hours. Thus, giving sorghum growers the flexibility they need with a wide harvest window, allowing them to get maximum value from every sorghum acre.

Brachytic Dwarf

Brachytic Dwarf is a cutting-edge forage sorghum technology that offers the best trait for superior standability and high leaf-to-stalk ratios. It produces sturdy, versatile, and high-yield plants with comparable tonnage to normal height sorghums.

Heat Stress

While the world has been struggling with climate change and increasing drought, we have been investing in developing traits and exploring management techniques that can help deliver more dependable outcomes in the harsh environments. Along with our partners University of Queensland, and Queensland's Department of Agriculture in Australia we have completed 5 years research on identifying sorghum genes with improved heat tolerance to incorporate it into new varieties.

Today we are deploying those discoveries and developing adapted superior genetic hybris with heat stress tolerance and climate resilience.

Dry Stalk

Dry Stalk for reduced moisture levels, for earlier baling and storage.

FORAGE

Sorghum

World-class forage seed from people who put sorghum first

Backed by a dedicated team of sorghum specialists and enhanced with cutting-edge characteristics like BMR-6, brachytic dwarf, dry stalk and photoperiod sensitivity, Alta Seeds forage sorghum seed hybrids are quickly setting the industry standard for silage tonnage, digestibility, quality and reliability wherever they're planted.

HYBRID	★ ADV F8322	★ ADV F8484	AF 7102	★ ADV F7232	ADV F8330
EMPYR	EMPYR	EMPYR		EMPYR	
KEY MESSAGES	Highest yeilds in class with Aphix-level sugarcane aphid tolerance.	Industry leader for yield with herbacide tollereance.	Shortest season high quality BMR in the industry.	Excelant yields with high forage quality potential BMR.	Conventional male sterile forage sorghum with great yeilds.
	It provides excellent seedling vigor and plant uniformity.	Ideal selection for producers looking for next-generation technology and superior yield potential.	Early BMR-6 forage sorghum with great standability.	Medium season forage sorghum with excellent yield for maturity and superior forage quality potential.	It will not produce grain unless a foreign pollen source is available.
	Excellent standability	Conventional midrib with brachytic dwarf characteristic brings great standability and harvest performance for those looking to feed silage.	Northern producers are able to reach high yield potential with tremendous forage quality without lodging.	Exceptional nutritional value	High levels of sugar and protein due to a lack of grain development.
	Exceptional producer in a wide range of growing conditions, consistently outyielding competitors in the same class.	igrowth® herbicide-tolerant technology allows for a clean stand establishment for maximum early season growth and weed suppression.	Performs best north of I-70 where humidity and the shorter growing season tend to be a challenge. Can be used in southern states for late planting or early harvest situations.	While its brachytic dwarf trait adds a much tighter distance between internodes and allows for better standability.	Excellent digestibility and high yield potential.
			Unsurpassed tillering capabilities, allowing for increased yields and ground cover.	Adaptable and wellsuited for full or limited irrigation or high-yield dryland.	
TECHNOLOGY	aphix™	igrowth™			
CROP ATTRIBURTES	ADV F8322	ADV F8484	AF 7102	ADV F7232	ADV F8330
DAYS TO HARVEST	105-110	115-120	85-90	110-115	105-110
TRAITS	APHIX	IGROWTH	BMR	BMR	MALE STERILE
BMR	NO	NO	YES	YES	NO
BRACHYTIC DWARF	NO	YES	NO	YES	NO
PLANT HEIGHT	8-10 FT	5-7 FT	6-8 FT	5-7 FT	7-9 FT
DAIRY QUALITY	S	S	HS	HS	S
FEED LOT QUALITY	HS	HS	MA	MA	HS

Sudangrass

SUDANGRASS SORGHUM

Most dynamic portfolio in the industry

ADV **S5501**

ADV **S6218**

ADV **S6404**

ADV **6501**

Our multi cut porfolio is by far the best most complete in the industry today. Curated for producer needs from the cowboy to the dairyman we have top yields combined with excellent nutritional qualities. From photo period senisitive, to BMR , to SCA tolerance we combine the best attributes to help your operation succeed.

Sorghum-sudangrass hybrids characteristically have smaller stalks than forage sorghum and strong tillering, and produce more tonnage than sudangrass. The regrowth ability of sorghum-sudangrass hybrids make them well-suited for multiple harvest systems.

Sudangrass

Sudangrass has finer stalks and produces more leaves and tillers than typical forage sorghum. It possesses excellent regrowth, plus quick recovery following cutting or grazing. Total biomass tonnage for a single harvest is typically less than yields of forage sorghum, making sundgrass ideal for grazing and hay production, in addition to serving as an excellent cover crop.

For the best quality and yield under a multicut program (including sorghum sudangrass), harvest at 40 days or when it reaches 40” of growth. Mechanical harvesters should be set to leave two nodes and 4” for brachytic or 6” of stubble for non-brachytic, whichever is higher. Harvesting at this height will promote more rapid regrowth.

At the latest, harvest when 50% of the plants have reached the flag-leaf stage for a one-cut program. Under a one-cut program, cutting height can be lowered to maximize yields. Opening the swather for a wide windrow promotes drying. When using sundgrass for grazing, cattle should be turned in at approximately 24” of growth. To promote rapid and adequate regrowth, grazing should be stopped when its height is reduced to 6”.

SORGHUM

Sudangrass

Most dynamic sorghum sudan and sudangrass portfolio in the industy

Our multi cut porfolio is by far the best most complete in the industry today. Curated for producer needs from the cowboy to the dairyman we have top yields combined with excellent nutritional qualities.

HYBRID	Graze It	Green Graze	★ ADV S5501	★ ADV S6218	★ ADV S6404	★ AF 6501	ADV S6525	AS 9301
EMPYR					EMPYR		EMPYR	EMPYR
KEY MESSAGES	Economic work horse hybrid.	Quality BMR 12 for high yeilds and good agronoics.	Highest yielding phopperiod sensitive sorghum sudan	Dry Stalk early matuity BMR	BMR , brachytic dwarf hybrid for excellent standability	True workhorse BMR hybrid most drought tolerance in line up	Full package: BMR, PPS, Aphix hybrid	High forage quality BMR striaght sudangrass
	Great yeild at lower cost	BMR 12 for increased forage quality	Highest yeilding sorghum sudan	Fastest regrowth in line up	Excellent tillering and standability	Best in class drought tolerance	BMR PPS hybrid with Aphix	Finer stems and quicker dry down
	Selected for its high productivity,exceptional sweetness and improved forage quality.	This hybrid features BMR-12 genetics for excellent digestibility and palatability.	Increased harvest window, allowing quality to remain unchanged for a longer period of time.	With dry stalk for less moisture.	High-level hybrid with brachytic dwarf that provides versatility to a producer's forage operation.	Excellent choice for tough and high-yield dryland conditions.	All-around elite hybrid.	The BMR-6 characteristic adds high quality to a plant that has fine stems and quick regrowth.
	Promotes greater intake, improved digestibility and increased animal performance in beef and dairy cows.	Solid disease resistance profile.	Drought tolerance.	A shorter maturity to help shorten the season and the yield potential to fit every geography.	It has the ability to fill a bunk or a hay bale to meet feed requirements with fewer inputs.	Outstanding recovery after cutting.	Recomended for hybrid in high-production environments.	Fast dry down, so it can be used in areas where putting up dry sudangrass hay is difficult.
	Wider and longer leaves than most conventional sorghumsudans	Excellent economic choice for producers wanting a good quality feed.		Southern environments will benefit from the advantages of dry stalk and the versatility of a grazing option as well as dry hay production.	A high-quality plant with improved palatability, this elite multicut hybrid will make excellent dry hay	Increases feedstock utilization and efficiency	The photoperiod sensitive maturity allows for excellent multicut management without the risk of having grain production.	
	Exceptional heat and drought stress tolerance very fast re-growth after cutting and improved plant health and disease tolerance.			Northern and short season scenarios will find an advantage as a haylage and baleage option for high-quality, high-moisture feed		Great option for rotational grazing.	In systems that focus on single-cut management, this product is an excellent tonnage producer and can provide some flexibility in harvest timing.	
TECHNOLOGY							aphix™	
TRAITS	ECOMNIC OPTION	BMR-12	HIGH YEILDS	BMR, DRY STALK	BMR, BRACHYTIC DWARF	HIGHEST DROUGHT TOLERANCE	APHIX	SUDANGRASS
BIO TYPE	SORGHUM SUDAN	SORGHUM SUDAN	SORGHUM SUDAN	SORGHUM SUDAN	SORGHUM SUDAN	SORGHUM SUDAN	SORGHUM SUDAN	SUDANGRASS
MATURITY	MEDIUM	MEDIUM	PHOTOPERIOD SENSITIVE	MEDIUM-EARLY	MEDIUM-LATE	LATE	PHOTOPERIOD SENSITIVE	MEDIUM
BMR	NO	BMR 12	NO	BMR 6	BMR 6	BMR 6	BMR 6	BMR 6
GAZING	S	S	MA	HS	HS	MA	MA	HS
MULTI-CUT	S	S	HS	HS	S	HS	HS	HS
EMERENCY SILAGE	MA	MA	MA	HS	HS	S	MA	S

Corn

CORN

More Choice, More Control, More Solutions

ADV **1090**

ADV **1124**

ADV **1137**

Offering solutions growers can count on starts with delivering product choices driven by their needs. Rooted in proven sorghum expertise, the people, products and global innovation pipeline of Alta Seeds are working in synch to bring more trust, choice and grower-focused solutions to the market. That's why Alta Seeds is offering high-performing corn hybrids. These top-producing hybrids offer a wide variety of characteristics that make it easy for growers to enhance productivity and streamline decision making.

Tailored to overcome environmental challenges with specific insect disease control, superior drought tolerance, wide area of adaptation, stable yields across all environments and more, Alta Seeds corn hybrids help growers have a plan for season-after-season success. In this guide, you'll discover the research-backed corn hybrids that deliver characteristics designed to bring major agronomic benefits to you and your farm.

Constant Change Calls for Constant Innovation

Because there's always a new challenge on the horizon, we continue to offer products specially designed to help you succeed — like **corn hybrids with high emergence and vigor scores, superior drought tolerance, wide areas of adaptation and more:**

Viptera | Viptera Z3

Controls damaging above-ground insects with two modes of action, resulting in less stand loss, noticeably cleaner ears with less insect damage and reduced risk of mold and mycotoxin development for high-quality grain.

Duracade Viptera

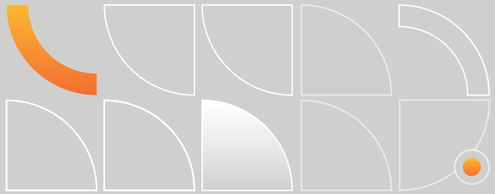
Controls 16 above- and below-ground insects. Above ground, there is less damage from ear-, stalk- and leaf-feeding insects, resulting in less stand loss, noticeably healthier ears with less insect damage and reduced risk of mold and mycotoxin development for high-quality grain.

Below ground, there are stronger, more robust root systems that lead to healthier plants, fuller leaves that allow for increased photosynthesis and maximum grain fill and more robust stalks that stand tall.

Corn

High-performing corn hybrids carefully curated for maximum return

These top-producing hybrids feature a wide variety of characteristics designed to overcome environmental challenges — with specific insect and disease control, superior drought tolerance and a wide area of adaptation, making it easy for growers to enhance productivity under a broad range of geographic and climatic conditions.



HYBRID	★ ADV 1090	★ ADV 1124	★ ADV 1137	ADV 1155	ADV 1178	ADV 1181
KEY MESSAGES	109 day hybrid with excellent drought tolerance and yield potential.	112 day hybrid with outstanding yield potential and excellent seedling vigor.	Excellent late season intactness.	115 day hybrid that is widely adapted and stable across all environments.	115 day hybrid that is widely adapted with potential for ear flex in low planting densities.	118 Day hybrid with high yield potential.
	Drought hardy hybrid with several trait packages making it suitable for any crop rotation situation.	Broad adaption and suitable on both irrigated and dryland acres.	Showy plant type with great eye appeal.	Unique hybrid with two trait packages available.	High yielding hybrid with exceptional plant health and staygreen qualities.	Above average plant health ratings.
	Its is also productive on both dryland and irrigated scenarios.	Available with several trait packages making it a good option in corn on corn situations.	High test weight grain quality	It is also a great silage option with a very strong agronomic package.	With the Viptera® trait package it is a great option on rotated acres.	Its big, showy, green plant type also make it a great silage option.
TECHNOLOGY	Viptera / Duracade Viptera	Viptera / Duracade Viptera	Duracade Viptera	Viptera / Duracade Viptera	Viptera	Viptera
RELATIVE MATURITY	109	112	111	115	117	117
STALK STRENGTH	VERY GOOD	GOOD	EXCELLENT	VERY GOOD	VERY GOOD	VERY GOOD
STAYGREEN	VERY GOOD	GOOD	VERY GOOD	EXCELLENT	EXCELLENT	VERY GOOD
GRAIN/SILAGE	GRAIN	GRAIN	EXCELLENT	DUAL PURPOSE	DUAL PURPOSE	DUAL PURPOSE
ROOT LODGING	GOOD	VERY GOOD	EXCELLENT	GOOD	VERY GOOD	EXCELLENT
PLANT HEALTH	VERY GOOD	GOOD	VERY GOOD	VERY GOOD	EXCELLENT	EXCELLENT

Aphix

Elite sugarcane aphid tolerance that protects sorghum crops anywhere aphids strike

Addressing the problem of sorghum aphids creating havoc in sorghum fields, Advanta has developed and designed a reliable solution, Aphix. Apart from controlling the outbreak of sorghum aphids, it also protects and promotes the growth of the sorghum crop.

A sustainable solution to ensure healthy sorghum cultivation

Advanta's answer to the threatening sugarcane aphids: Developed at Advanta's Biotechnology Center at Texas A&M University, Aphix is Advanta Seeds' latest technology in sorghum hybrids. It gives the crop high and measurable tolerance to the attack of the yellow sugarcane aphid. The USDA standards have defined the Aphix labelling trait as delivering a superior performance and the highest level of SCA tolerance. It works as an outstanding alternative to chemical insecticides as it assists better and more profitable farming and preserves the environment as well.

Aphix sorghum hybrids - a super solution for SCA control: APHIX sorghum hybrids have a better rate of SCA management compared to non-Aphix hybrids. In a season with favorable environmental conditions, where the sugarcane aphid attack pressure is high, a single preventive insecticide spraying is enough to keep the crops free of aphids, while in a non-Aphix crop, an average of 3 to 4 sprayings might be necessary.

Effective Aphid management solution for farmers

- Advanta's Aphix enables **proper pest management** that guarantees a sustainable and profitable sorghum production.
- The growers get **bigger returns on their investment** and the environment is taken care of simultaneously.
- It is a blessing to global farmers who now have a powerful tool for minimizing aphid related losses.

igrowth®

A groundbreaking herbicide tolerance technology for maximizing Sorghum yields

Advanta's solution to rampant weed growth

igrowth® is a herbicide tolerance technology that was developed by Advanta Seeds in Argentina, using mutagenesis methods, which is a non-transgenic technology, so it is not genetically modified.

It has made a game changing difference in weed control to sorghum farmers. With it, Advanta has expanded the reach of its first commercially available, non-GMO herbicide-tolerant technology for grain sorghum and forage sorghum globally.

Weed growth, a major concern!

Grassy weed species can be hard to control due to a lack of chemicals that can be sprayed over the top without causing injuries to sorghum crops. Weed competition is a major cause of reduced yield potential as it competes with the sorghum crops for resources like water and nutrients. Depending on the region, wet or dry season, infestation and weed species, farmers face yield losses up to 70% in extreme cases.

This technology allows farmers to apply registered herbicides at the recommended rates to igrowth® sorghum plants without causing damage. If this herbicide were to be applied on sorghum without this technology, it could cause failure or irreversible damage to the crop.

The igrowth® technology will allow sorghum growers the freedom to utilize WSSA Group 2 herbicides to assist in their integrated weed control programs and will be particularly useful in controlling some tough to control weeds, like Texas panicum and foxtail.

igrowth® - a technology specifically for sorghum farmers

With igrowth®, Advanta simplifies weed control with the possibility to spray imidazolinones herbicides as either Pre or Post Emergence, thus, reducing weed competition and their usage of water and nutrients preserving these essential resources for the sorghum crop.

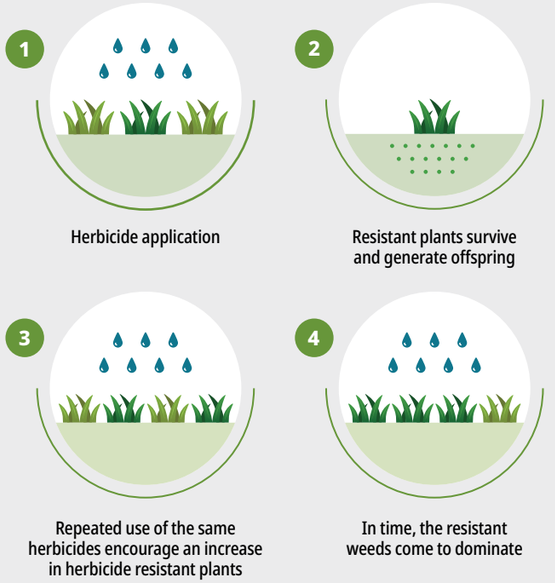
igrowth® hybrids deliver groundbreaking performance that transforms sorghum cultivation and help realize its true potential with bigger and better yields.

The successful combination of igrowth® and top performing genetics has **accelerated sorghum growth** even in the face of unpredictability of weather, weed pressure, and challenging soils.

Responsible management of herbicide tolerant crops

It is important to **manage herbicide tolerance crops properly** to preserve the effectiveness and value of these technologies for the future. Several agronomic practices are recommended to reduce weed resistance pressure.

How do herbicide resistant weeds develop?



Best Management Practices (BMP) to delay IMI herbicide weeds resistance:

Continue utilizing existing pre and post-emergent herbicides (e.g. S-metalachlor, Mesotrione, Atrazine), thus reducing the development pressure of resistant weeds and increasing grass and broadleaf weed control.

DO NOT plant igrowth® sorghum in fields known to have ALS resistant johnsongrass or shattercane.

Rotate to a non-ALS inhibitor herbicide tolerant sorghum variety in the year following planting of igrowth® sorghum.

DO NOT replant igrowth® sorghum in consecutive years.

The grower must observe an 18-month interval between an application of IMIFLEX in one year and the next planting of igrowth® sorghum.

Key stewardship rules

1. Start clean – **utilize a burndown herbicide at planting**. The use of a certain herbicide-resistant crop does not limit the grower to using only that herbicide. Conventional herbicides registered for cultivation can and should remain part of the overall weed management system. Just as non-chemical options: crop competition, mechanical weeding can be utilized.

2. **Limit the number of applications of the same herbicide**, or herbicides in the same mode of action, in a single campaign (rotate chemical modes of action).

3. **Always follow product labels for rates and application timings**. Alternate your modes of actions to control hard to control weeds.

4. Always use those herbicides legally registered for use with sorghum seeds and/or sorghum seed containing igrowth® technology.

5. Control of igrowth® sorghum volunteer plants on a subsequent crop must be done with other herbicides, rather than imidazolinone mode of action (ALS inhibitors). After spraying herbicides, **assess the quality of field coverage to detect possible breaks in control.**

6. If a potential resistant weed or resistant weed population is found, use another available control method to prevent its spread in the field that could also be non-chemical options.

7. It is important to note the **residual period of the herbicide in the soil** for scheduling subsequent crop planting. Pay attention to crops that may be susceptible to imidazolinone-family herbicides.

8. Crop Rotation: Avoid continuous cropping of igrowth® sorghum on the same field or any other IMI herbicides family tolerant crop for volunteer control and active ingredient weed control rotation. DO NOT repeat sorghum as a crop in the following year after growing igrowth® sorghum. Rotate to another crop that will use alternate herbicide mode of action for weed management and control.

Imiflex

More sorghum, fewer weeds

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

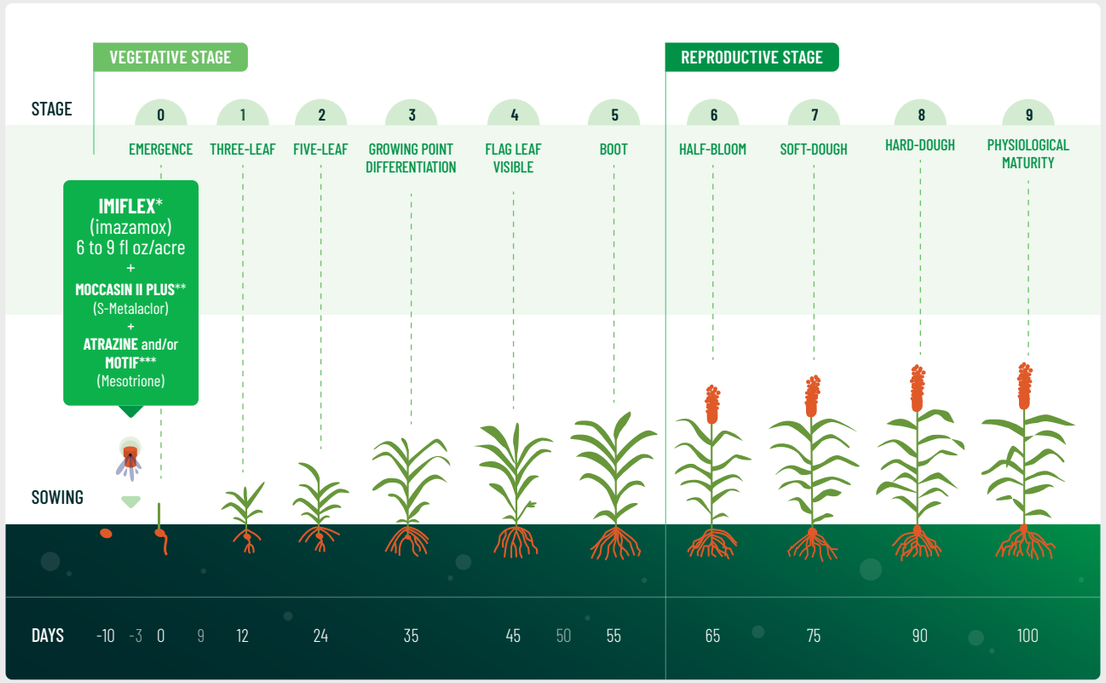
- **Broad-spectrum systemic herbicide** for use in sorghum containing the Alta Seeds **igrowth®** tolerance technology.
- **Excellent crop safety with igrowth® sorghum.** Consistent performance across geographical regions.
- **Flexible application** timing can be used pre- or post-emergence.
- **Long-lasting control** of hard-to-kill grassy weeds including Texas panicum, crabgrass and foxtail.
- **Compatibility** with traditional sorghum herbicide programs.

PROPOSED USE

IMIFLEX effectively controls weeds in conservation tillage and conventional tillage production systems. IMIFLEX can be applied pre-emergence or early post-emergence in igrowth® (imidazolinone-resistant sorghum) varieties. Apply only on selected sorghum varieties labeled “igrowth®”.

Apply IMIFLEX pre-emergence or early post-emergence when weeds are actively growing and before broadleaf weeds exceed a height of 3 inches and grass weeds exceed 4 to 5 leaves (unless otherwise indicated, refer to Weeds Controlled section for specific weed sizes). Apply when the majority of weeds are at the specified growth stage.

CASE 1| SPRAY IMIFLEX IN PRE-EMERGENCY



IMIFLEX

APPLICATION

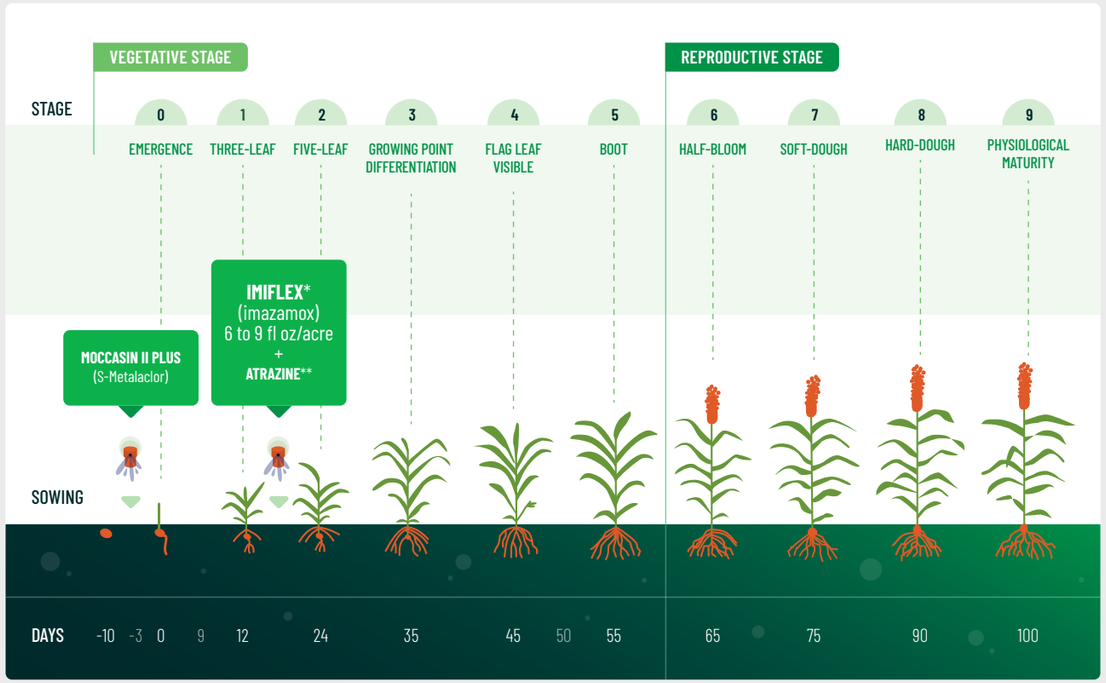
For pre-emergence use in igrowth® sorghum, apply IMIFLEX at 6 fl oz (0.047 lb ae)/A to 9 fl. Oz (0.072 lb ae)/A. At the lower rate, 1 gallon of IMIFLEX will treat 21.3 acres of igrowth sorghum.

*For improved weed control, crop oil concentrate or methylated seed oil may be substituted for nonionic surfactant.

**Tank mix for superior annual grassy weeds control.

***Tank mix for superior broadleaves weeds control.

CASE 2| SPRAY IMIFLEX IN POST-EMERGENCY



IMIFLEX

APPLICATION

For post-emergence use in igrowth® sorghum, apply IMIFLEX 6 fl oz (0.047 lb ae)/A. At this rate, 1 gallon of IMIFLEX will treat 21.3 acres of igrowth® sorghum.

*For improved weed control, crop oil concentrate or methylated seed oil may be substituted for nonionic surfactant. Use of COC or MSO in place of NIS in igrowth® sorghum may increase crop response. When IMIFLEX is tank mixed with another herbicide, using COC or MSO in igrowth® sorghum is only advised when an IMIFLEX tank mix partner allows use of COC or MSO. See Adjuvants section under Mixing Instructions for specific instructions.

**Tank mix most reliable weed control program.

Imiflex herbicide rotational crop restrictions

Imidazolinone crops where developed for an **ease of weed control** utilizing different approved and registered active ingredients that may vary on doses and residual effect on the soil. Subsequent crops must attend **minimum residual effect period to avoid any type of crop injury** due to susceptibility to any chemical residual effect. To **avoid potential damage to follow-up crops**, the waiting periods indicated below must be adhered to following application of IMIFLEX.

RE-CROPPING INTERVALS (MONTHS)	
Dry beans, soybeans, dry peas, Edamame, English peas, Lima beans (succulent), Snap beans, and any 'imidazolinone tolerant' crops	Anytime
Alfala, Wheat (non-Clearfield)	3 months
Rye	4 months
Corn (non-Clearfield field, seed, sweet, and popcorn)	8.5 months
Barley, cotton, millet, oat, peanut, rice, sunflower, tobacco	9 months
Sorghum (all types, including igrowth)	18 months

MORE INFORMATION

For more information, contact an Advanta Seeds representative and check the registered chemical label for additional details.

Nomenclature

GRAIN SORGHUM

G 1 3 2 9

G - Letter denotes grain sorghum products
1st Number - Denotes maturity | **1** Early and M/E, **2** Medium, **3** M/L and Late
2nd Number - Denotes grain color | **1** Red, **2** Bronze, **3** Cream, **4** White

FORAGE SORGHUM

F 7 2 3 2

F - Letter denotes single-cut silage products
1st Number - Denotes mid-rib | **7** for BMR-6, **8** for conventional mid-rib
2nd Number - Denotes maturity | **1** Under 90 DH, **2** 91-100 DH, **3** 101-115 DH, **4** Over 115

Multi-cuts

S 6 2 1 8

S - Letter denotes sorghum-sudan and sudangrass hybrids
1st Number - Denotes mid-rib | **6** for BMR-6, **5** for conventional mid-rib
2nd Number - Denotes maturity | **2** M/E or Early, **3** Medium, **4** Late, **5** Full or PPS

igrowth®

F 8 4 8 4 IG

IG - Products with IG at the end of the number are igrowth hybrids

Important: Always read and follow label and bag tag instructions; only those labeled as tolerant to glufosinate may be sprayed with glufosinate ammonium-based herbicides. DuracadeViptera™, Duracade®, Viptera®, Viptera®Z3 are trademarks of a Syngenta Group Company. More information about Duracade® is available at http://www.biotradestatus.com.

Seed products with the **LibertyLink®** (LL) trait are resistant to the herbicide glufosinate ammonium, an alternative to glyphosate in corn, and combine high-yielding genetics with the powerful, non-selective, post-emergent weed control of Liberty® herbicide for optimum yield and excellent weed control. LibertyLink®, Liberty® and the Water Droplet logo are registered trademarks of BASF.

YieldGard VT Pro® is a registered trademark used under license from the Bayer Group.

Corn trait technology incorporated into these seeds is commercialized under license from Syngenta Seeds, LLC. **Herculex® Technology** incorporated into these seeds is commercialized under license from Corteva Agriscience LLC. HERCULEX® and the HERCULEX Shield are trademarks of Corteva Agriscience LLC.

Before opening a bag of seed, be sure to read and understand the stewardship requirements, including applicable refuge requirements for insect resistance management, for the biotechnology traits expressed in the seed set forth in the technology agreement that you sign. By opening and using a bag of seed, you are reaffirming your obligation to comply with those stewardship requirements.

Notes

Alta seeds by ADVANTA

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