igrowth®

NEW TECHNOLOGY FOR WEED CONTROL IN SORGHUM

WHAT IS IGROWTH TECHNOLOGY?

The igrowth technology in sorghum was developed by Advanta Seeds through mutagenesis methods and provides tolerance to herbicides of the Imidazolinone family. The igrowth trait is NOT a GMO.

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 death or irreversible damage to the crop.

The igrowth technology will allow Australian sorghum growers the freedom to utilise registered group B herbicides to assist in their integrated weed control programs, and will be particularly useful in controlling some common summer grass weeds in their summer crops.

Advanta's igrowth technology also provides the option for double cropping back into paddocks which have grown Clearfield tolerant winter crops, avoiding issues with plantback residuals.

SENTINEL IG

- World first imidazolinone tolerant grain sorghum hybrid
- Excellent yield potential
- Suitable for all sorghum growing regions
- Developed in Australia using Pacific Seeds' elite grain sorghum genetics to ensure adaptation to Australian conditions
- Excellent yield stability across all environments

HYBRID ATTRIBUTES

Maturity	Medium- Long
Days to 50% flower	
Spring	74-78
Summer	70-73
Central QLD	59-62

Midge test rating	5
Seedling vigour	8
Seedling cold tolerance	8
Tillering	8
Standability	7
Grain size	8
Grain colour	Red
Pollen production	8
Pre-flowering stress tolerance	8
Post-flowering stress tolerance	8
Irrigation	Yes
Wide rows	Yes
Imidazolinone Tolerant	Yes

KEY:
Rating Scale 1 - 9
1 - Poor
9 - Excellent

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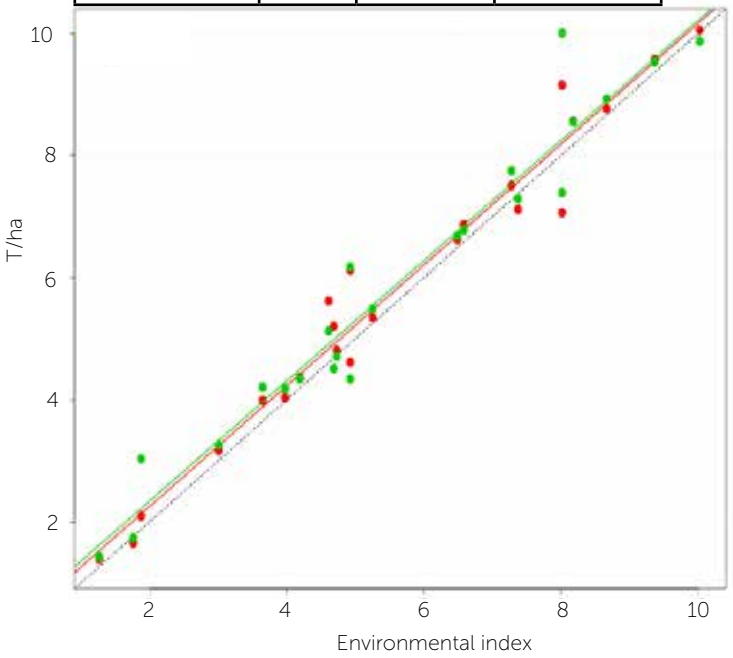
HOW DOES SENTINEL IG PERFORM IN AUSTRALIAN CONDITIONS

Sentinel IG has been widely trialled across multiple seasons and multiple environments to assess performance not only of the herbicide tolerance capabilities of the igrowth trait, but also to ensure it is well adapted and performs reliably across Australian sorghum growing areas.

The graphs below are the result of 23 fully replicated trials over the 2015/16 and 2016/17 summer seasons, and demonstrate the hybrid's performance against both the Australian benchmark hybrid, MR-Buster as well as common competitor non imidazolinone tolerant hybrids. Yield data for Sentinel IG is unsprayed.

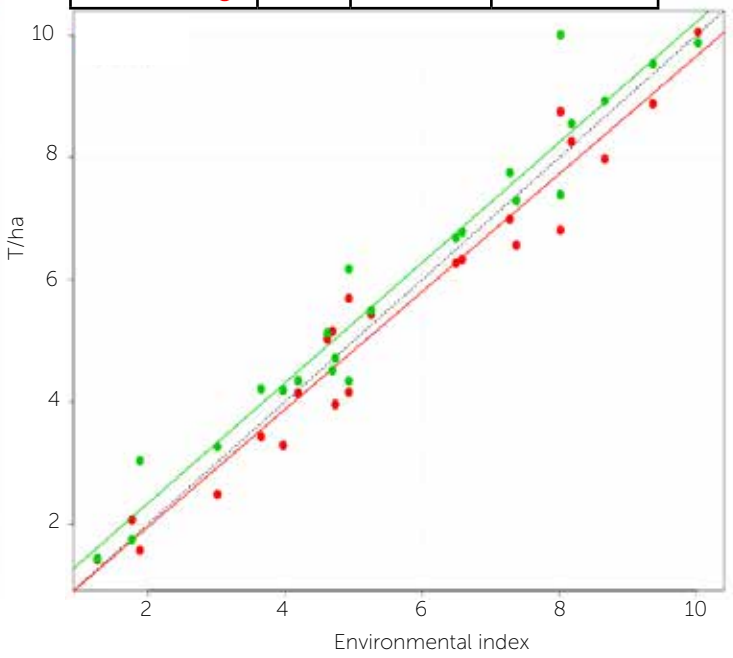
SENTINEL IG vs MR-BUSTER - 2 SEASONS

HYBRID	Trials	Mean T/ha	Rel Mean %
Sentinel IG	23	5.8	105.1
MR-Buster	23	5.7	103.8



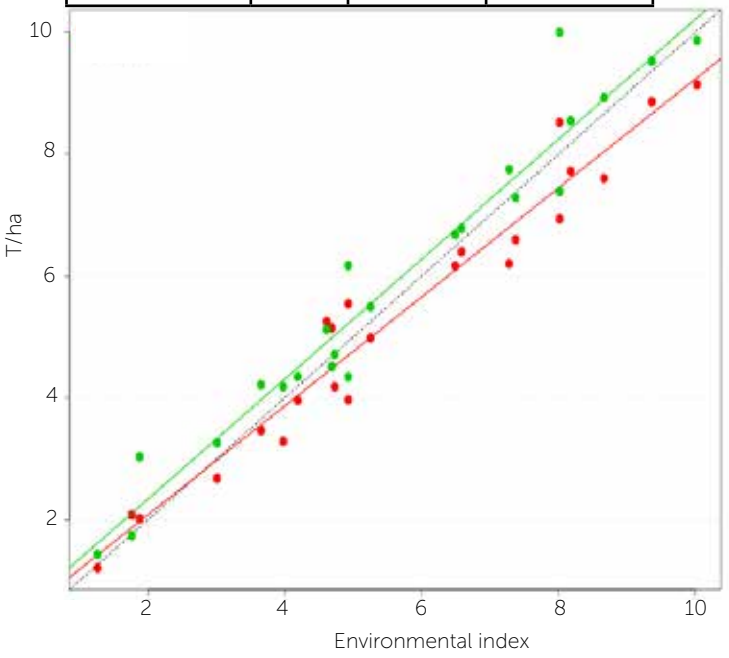
SENTINEL IG vs G33 - 2 SEASONS

HYBRID	Trials	Mean T/ha	Rel Mean %
Sentinel IG	23	5.8	105.1
G33	23	5.3	96.7



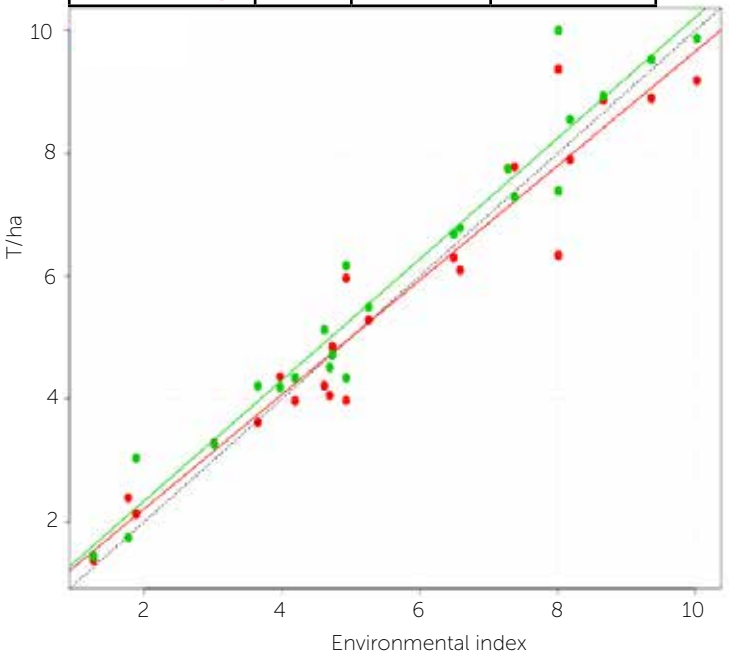
SENTINEL IG vs G22 - 2 SEASONS

HYBRID	Trials	Mean T/ha	Rel Mean %
Sentinel IG	23	5.8	105.1
G22	23	5.2	94.6



SENTINEL IG vs HGS-114 - 2 SEASONS

HYBRID	Trials	Mean T/ha	RelMean %
Sentinel IG	23	5.8	105.1
HGS-114	23	5.5	99.3



BE AWARE OF SPRAY DRIFT

Conventional, non herbicide tolerant sorghum is extremely sensitive to imidazolinone herbicide.

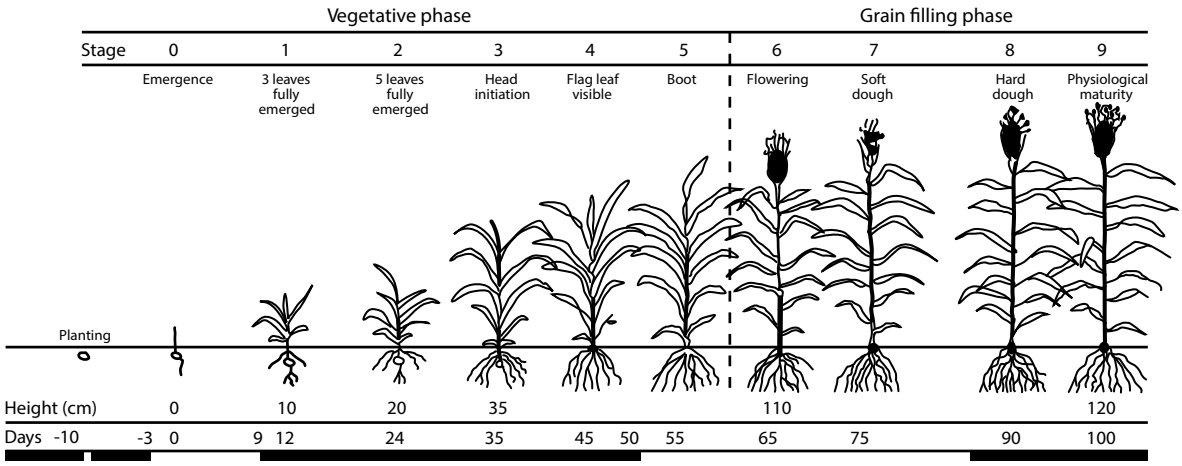
The image to the right demonstrates igrowth sorghum on the left with spray drift onto the buffer crop of conventional treated sorghum on the right.

EFFECTIVE GRASS WEED CONTROL

The image to the left was taken at the Pittsworth, QLD Sentinel IG trial sites and clearly demonstrates the weed control achieved in Sentinel IG when Intervix is applied at recommended rates and in recommended timings.

Note the equal crop vigour of the Sentinel IG sorghum in both sprayed and control sections.

IGROWTH SORGHUM HERBICIDE APPLICATION TIMING



FALLOW APPLICATION
DUAL GOLD 1.0L/HA

PRE EMERGENT/POST SOW
DUAL GOLD 1.0L/HA + 1KG/HA
GESAPRIM WG + KNOCK DOWN

IN-CROP 2-6 LEAF
0.75-1.0L/HA INTERVIX
0.5L/100L HASTEN OIL

SHIELDED SPRAYING, INTER-ROW CULTIVATION
SELECTIVE SPOT SPRAY / CHIPPING

HARVEST AID
KNOCK DOWN LATE WEEDS

Intervix is registered for use on sorghum with the igrowth trait APVMA permit number PER85318

GOOD PRACTICES FOR THE MANAGEMENT OF TOLERANT CROPS TO HERBICIDES

PROPER MANAGEMENT OF HERBICIDE TOLERANT CROPS

Group B herbicides having the ALS inhibitor mode of action are vulnerable in repeated use in selecting resistant herbicides when used to the exclusion of other weed control methods including herbicides having a different mode of action.

The risk of evolution of resistant weed populations is dependent on the frequency of resistant plants in the starting population, the persistence or activity of the applied product, the frequency of application and the history of use of other herbicides sharing the same mode of action prior to the deployment of a new Group B herbicide.

In many sorghum growing areas, Group B herbicides have been sparingly used because of their incompatibility with farming systems including sorghum and cotton where these are quite susceptible to carryover of more persistent Group B herbicides such as metsulfuron, chlorsulfuron, triasulfuron and imazapic.

For this reason, there is little evidence of resistance to Group B herbicides in these areas. Even in districts with a longer history of use of imazapic (Flame) in fallow, there have been no confirmed instances of evolved resistant weed populations though this risk remains should this practice be maintained uninterrupted.

BEST PRACTICES FOR HERBICIDE RESISTANT CROPS

Weed resistance to IMI herbicides can be avoided by simultaneously employing other weed control measures and in particular herbicides having differing modes of action. The most prudent approach in incorporating IMI herbicides in conjunction to imidazolinone-tolerant sorghum is to continue use of existing pre and post-emergence herbicides.

This approach has been adopted by successful users of Lightning herbicide in IT maize who found the exclusive use of Lightning often lead to a shift of weed populations that were less susceptible or tolerant to Lightning.

In this instance, the inclusion of a pre-emergence herbicide program including s-metolachlor (Dual Gold) and atrazine followed by post-emergence applications of Lightning has enhanced a traditional weed control program relying entirely on s-metolachlor and atrazine and post-emergence treatments capable of controlling broadleaf weeds only.

This approach has also ensured a much lower risk of the development of weed populations resistant to IMI herbicides over the longer term and has already reduced the occurrence of a build-up of naturally tolerant weeds to IMIs.

Source: Andrew Somervaille, Jubilee Consulting

INTEGRATED WEED MANAGEMENT AND STEWARDSHIP

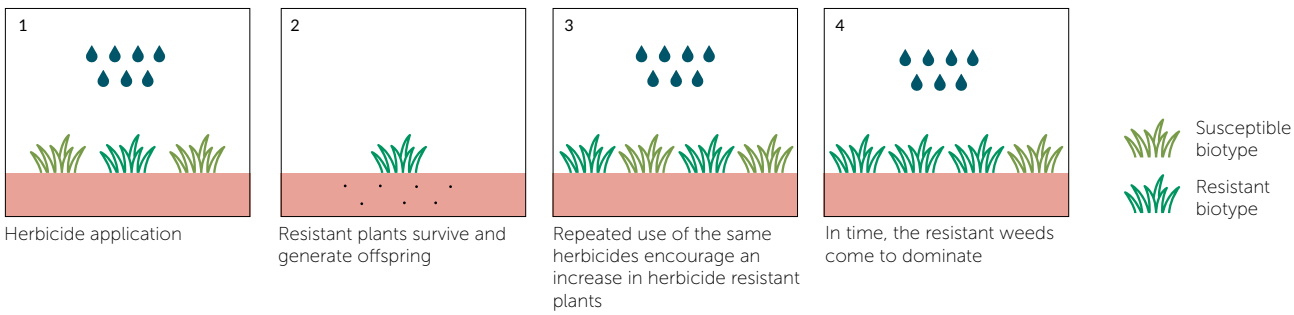
MANAGING WEED RESISTANCE: BMP

- Crop Rotation
- Rotate chemical modes of action
- Maintain the use of pre-emergent herbicides
- Use more than one chemical mode of action
- Use non-chemical options: crop competition, mechanical weeding
- Control escapes: keep the seed bank low

KEY STEWARDSHIP RULES

- Do not apply to fields with high populations of summer weeds
- Do apply chemical with this mode of action on the target weeds more than once per 12 month period
- Scout for survivors after application, implement control strategies
- Report any serious spray failures
- Control sorghum spp on edges and fence lines
- Clean down equipment to prevent weed spread

HOW DO HERBICIDE RESISTANT WEEDS DEVELOP?



WEEDS IN THE NORTHERN REGION WITH KNOWN CHEMICAL RESISTANCE

Weeds appearing in this table have had herbicide resistance confirmed through testing.

Therefore, if a weed does not appear in the table, it does not necessarily mean that it is not herbicide resistant.

Weed species	Herbicide group	Example herbicide
Grass weeds		
Awnless barnyard grass	C – triazines	atrazine
	M – glycines	glyphosate
Liverseed grass	C – triazines	atrazine
	M – glycines	glyphosate
Paradoxa grass	A – 'fops'	fluazifop
	A – 'dims'	clethodim
Wild oats	A – 'fops'	diclofop
	A – 'dims'	tralkoxydim
	B – sulfonylureas	mesosulfuron
	Z – arylaminopropionic acids	flamprop-methyl
Windmill grass	M – glycines	glyphosate
Annual ryegrass (NSW only)	A – 'fops'	diclofop
	A – 'dims'	clethodim
	B – sulfonylureas	chlorsulfuron
	B – imidazolinones	imazapic, imazapyr
	M – glycines	glyphosate
Broadleaf weeds		
African turnip weed	B – sulfonylureas	chlorsulfuron
Black bindweed	B – sulfonylureas	chlorsulfuron
Charlock	B – sulfonylureas	chlorsulfuron
Common sowthistle	B – sulfonylureas	chlorsulfuron
Flaxleaf fleabane	M – glycines	glyphosate
Indian hedge mustard	B – sulfonylureas	chlorsulfuron
	B – sulfonamides	metosulam
Starfruit	B – sulfonylureas	bensulfuron
Turnip weed	B – sulfonylureas	chlorsulfuron
Wild radish	B – sulfonylureas	chlorsulfuron
Compiled by Andrew Storrie, 2012		

Pacific Seeds

Growing possibilities

pacificseeds.com.au/igrowth

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