

GROUP	5	HERBICIDE
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Moderate resistance risk

The herbicides in the new CropLife Group 5 and Group 6 were previously all in Group C in Australia. The Mode of Action was described as "Inhibitors of photosynthesis at photosystem II". Now, to match international grouping, this MOA has been split into two, identified as Group 5 (PSII D1 Serine 264 binders) and Group 6 (PSII D1 Histidine 215 binders). The rationale is that there is still no demonstrated target site cross-resistance between these two groups. (GHRAC MOA Update _2020).

Globally herbicide resistance to the Group 5 herbicide mode of action has been confirmed and documented in more than 80 grass and broadleaf weed species across more than 40 countries. Resistance to the Group 5 mode of action is common; in fact, it is the third most likely herbicide mode of action to develop resistance.

In Australia, Group 5 resistance exists in 9 weed species across more than 100 weed populations including more than 50 populations of annual ryegrass, more than 20 populations of wild radish, liverseed grass, squirrel tail fescue (silver grass), dwarf (stinging) nettles, Indian hedge mustard, brome grass and barnyard grass ("at risk weeds").

In all situations the resistance status of "at risk weeds" should be determined prior to sowing. Resistance has developed in broadacre, horticultural and non-crop situations. CropLife Australia gives specific guidelines for the use of Group 5 herbicides in all situations and particularly in triazine tolerant (TT) canola, and canola with both glyphosate tolerance and triazine tolerance (TT-RR canola) following increasing reports of resistance development:

20

1. For "at risk weeds", avoid using Group 5 herbicides as the only means of control in the same paddock in consecutive years.
2. Watch and record weed escapes in paddocks with a long history of Group 5 use.
3. Control survivors to prevent seed-set using a herbicide with a different Mode of Action to Group 5 or use another weed management technique, particularly in heavily infested paddocks.
4. Avoid dry sowing in heavily weed infested paddocks. Wait for a germination of weeds after the opening rains in weedy paddocks and use a pre-plant knockdown or cultivation to maximise weed control at this stage.
5. **TT Canola** Growing TT Canola in a paddock treated with triazine herbicides in the previous season is a high resistance risk and is not recommended. For ryegrass control, use simazine, atrazine, metribuzin or terbuthylazine plus a pre- emergence herbicide with a different mode of action (e.g. trifluralin) prior to sowing. If necessary, follow-up with a post emergent herbicide with a different mode of action (e.g. clethodim) to control escapes from pre-emergent treatments.

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6. **TT-RR Canola** Refer to the specific guidelines for Group 9 herbicides in addition to those given here for triazine herbicides.
7. **TT-LL Canola** Refer to the specific guidelines for Group 10 herbicides in addition to those given here for triazine herbicides.

The above recommendations should be incorporated into an Integrated Weed Management (IWM) program. In all cases try to ensure surviving weeds from any treatment do not set and shed viable seed. Keep to integrated strategies mentioned in this brochure including cultural weed control techniques to reduce the weed seedbank. Make sure you mix and rotate herbicides from different mode of action groups. Always consult the product label prior to use.

Below is a list of Group 5 approved active constituents and, in parenthesis, the trade name of the first registered product or successor. Refer to the APVMA website (www.apvma.gov.au) to obtain a complete list of registered products from the PUBCRIS database.

Chemical family	Active constituent (first registered trade name)
GROUP 5 Inhibitors of photosynthesis at photosystem II (D1 Serine 264 binders)	
Amides	propanil (Stam®)
Phenylcarbamates	phenmedipham (Betanal®)
Pyridazinones	chloridazon (Pyramin®)
Triazines	ametryn (Amigan®*, Gesapax® Combi*, Krismat®, Primatol Z®), atrazine (Gesapax® Combi*, Gesaprim®, Primextra® Gold*), cyanazine (Bladex®), prometryn (Bandit®*, Cotogard®*, Gesagard®), propazine (Agaprop®), simazine (Brunnings RTU Path Weeder®*, Gesatop®, Bantox®*, Onceyear Path Weeder®*), terbuthylazine (Effigy®*, Firestorm®*, Palmero TX®*, Terbyne®), terbutryn (Agtryne® MA*, Amigan®*, Igran®)
Triazinones	amicarbazone (Amitron®*) hexazinone (Bobcat I-Maxx®*, Velmac Plus®*, Velpar® K4*, Velpar® L), metribuzin (Aptitude®*, Sencor®)
Uracils	bromacil (Hyvar®, Krovar®*), terbacil (Eucmix Pre Plant®*, Sinbar®, Trimac Plus®*)
Ureas	diuron (Karmex®, Krovar®*, Velpar® K4*), fluometuron (Bandit®*, Cotogard®*, Cotoran®), linuron (Afolon®), metobromuron (Soletto®), methabenzthiazuron (Tribunil®), siduron (Tupersan®), tebuthiuron (Graslan®)

* This product contains more than one active constituent

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