



Overwatch®

HERBICIDE

PRODUCT GUIDE





Features, Benefits and Label Essentials

FMC's Overwatch® Herbicide will change the way you see your pre-emergent herbicide program. With the visual signature of magenta-coloured annual ryegrass in the field, you know Overwatch® Herbicide is working hard for you throughout the season.

When used as directed, Overwatch® Herbicide provides a good level of crop safety, operational flexibility and reliable control of annual ryegrass, bifora, sowthistle / milk thistle, wireweed, lesser loosestrife and silvergrass for up to 12 weeks after application. With FMC's Overwatch® Herbicide you will see the difference in the paddock.



Outstanding annual ryegrass control

Annual ryegrass is the most costly broadacre weed to control in Australia in terms of lost yield and the resulting revenue loss.

- Overwatch® Herbicide provides a new level of annual ryegrass control in durum wheat, canola and barley, and a comparable level of control to the current market standard in wheat, faba beans and field peas.
- Excellent compatibility with a wide range of herbicides, including TrifluX# Selective Herbicide, Gesaprim# Granules and Avadex# Xtra Selective Herbicide, makes Overwatch® Herbicide ideal for broad spectrum, robust weed control and resistance management strategies.
- Overwatch® Herbicide provides up to 12 weeks of residual control.
- Due to its unique mode of action, growers will see Overwatch® Herbicide working in the field as annual ryegrass germinates, bleaches out, and dies.



Up To 12 weeks of residual weed control

- There are many variables that contribute to persistence of weed control by pre-emergent herbicides, such as soil type and weather conditions. However, in general, growers can expect up to 12 weeks control of annual ryegrass with Overwatch® Herbicide.
- The series of pictures below were taken in October 2019, 153 days after application of the herbicides at the FMC dedicated field trial site near Goroke, Victoria. Overwatch® Herbicide continued to maintain control of annual ryegrass at this point, while the level of control from the adjacent pre-emergent herbicide standard showed little difference to the untreated control.



Overwatch® @ 1.25 L/ha



Boxer Gold® @ 2.5 L/ha



Untreated Control

Picture. Overwatch® Herbicide vs Boxer Gold® and untreated control 153 days after application. Trial ID: 2019-OH-WH-RT-EFF-Vic-01



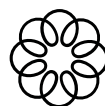
Unique Group 13 herbicide (formally Group Q)

- Belonging to the isoxazolidinone chemical family, Overwatch® Herbicide's, active ingredient, Isoflex®, has a unique mode of action for control of weeds in wheat, including durum wheats, barley, canola, faba beans and field peas.
- Overwatch® Herbicide has proven effective for control of annual ryegrass biotypes that have developed resistance to other modes of action.
- Overwatch® Herbicide provides an effective tool in the fight against herbicide resistance and will help prolong the useful life of currently available herbicide options.



Broad spectrum activity

- Along with excellent annual ryegrass control, Overwatch® Herbicide provides long-lasting control of many other weeds including silvergrass, sowthistle, bifora, lesser loosestrife and Wireweed.
- Overwatch® Herbicide suppresses many other grass and broadleaf weeds including brome grass, wild radish, capeweed and prickly lettuce.
- With its wide spectrum of activity against both grasses and broadleaf weeds, Overwatch® Herbicide can form part of an effective integrated weed management (IWM) program by taking the pressure off other MOA herbicide groups, whilst contributing to further reducing the weed seed bank.



Outstanding agronomic flexibility

- With a nil re-cropping interval for wheat, barley, canola, faba beans and field peas, Overwatch® Herbicide allows greater flexibility when poor seed germination, dry or false breaks, or pest infestations mean a block needs to be re-sown.
- When late paddock changes are needed due to a late seasonal break, lack of availability of a preferred seed variety, or changes in commodity prices, the earlier choice of an Overwatch® Herbicide application means one less problem to deal with.

Weed spectrum

The unique active ingredient in **Overwatch® Herbicide, Isoflex®**, has activity on a wide range of grass and broadleaf weeds. In addition to the obvious benefit of direct weed control, weeds that are suppressed by **Overwatch® Herbicide** are more readily outcompeted by the crop itself. This broad-spectrum activity allows growers to choose mix partners from the **Overwatch® Herbicide** label to complement the overall herbicide program



Weed spectrum of Overwatch® Herbicide compared to industry standard pre-emergent herbicides

	Overwatch[®] <small>HERBICIDE</small>	Rustler[®]	Luximax[#]	Boxer Gold[#]	Sakura[#]	Mateno[#] Complete
MOA Group	13 (Q) Isoflex [®]	3 (D) propyzamide	30 (T) cinmethylin	15 (J) & 15 (K) prosulfocarb + S-metolachlor	15 (K) pyroxasulfone	15 (K) + 12 (F) + 32 ¹ pyroxasulfone+ diflufenican + aclonifen
Wheat	✓		✓	✓	✓	✓
Durum wheat	✓			✓		
Barley	✓			✓		✓
Canola	✓	✓				
Field peas	✓	✓		✓	✓	
Faba beans	✓	✓		✓		
Lupins		✓		✓	✓	
Lentils		✓		✓	✓	
Chick peas		✓		✓	✓	
Triticale					✓	
Annual ryegrass	C	C	C	C	C	C
Silvergrass	C	C	C	C	C	C
Bifora	C					
Sowthistle / Milk thistle	C					
Wireweed	C					
Lesser loosestrife	C					
Barley grass	S	C	C	S ³	C	C
Wild oats	S	C	S		S	S ²
Brome grass	S	C	S		S	S ²
Phalaris	S	C			C	C ²
Bedstraw	S					
Capeweed	S					S ²
Prickly lettuce	S					
Wild radish	S					
Deadnettle						S ²
Indian hedge mustard						S
Denseflower fumitory						S ²
Stone crop				C		C ² (W); S (B)
Toad rush			C	C	C	C
Winter grass		C				
Fescue		C				
Rats tail Fescue		C				

¹ Aclonifen was not registered in Australia until after the Australian classification system was standardised with the global HRAC classification system.

² Only in wheat at the highest label rate for IBS application.

³ Only in wheat and barley.

W - Wheat B - Barley

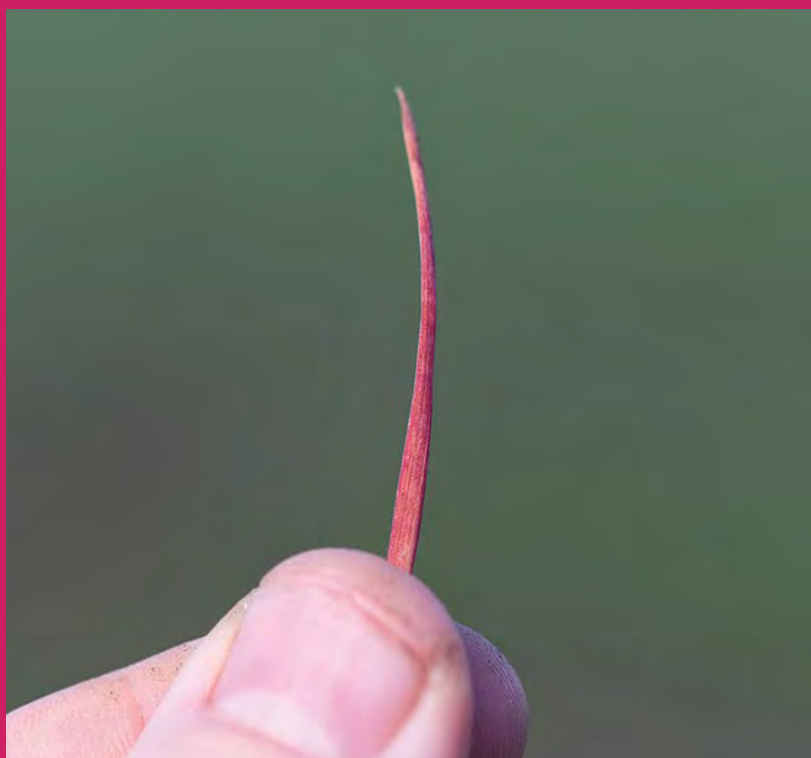
Control **C** Suppression **S**

The visual nature of Overwatch® Herbicide

The unique Isoflex® active powering Overwatch® Herbicide works by blocking carotenoid biosynthesis.

After absorption, susceptible germinating weeds are deprived of protective carotenoids which disrupts their ability to photosynthesise. Weed seedlings that have absorbed Overwatch® Herbicide commonly emerge with a bleached and/or magenta appearance. This visual signature of Overwatch® Herbicide is most evident in annual ryegrass.

The affected seedlings then rapidly desiccate over a few weeks when their seed energy store is depleted.



Pic. annual ryegrass affected by Overwatch® Herbicide.



Pic. affected wireweed in a wheat crop from Overwatch® Herbicide applied at 1.25 L/ha.



Pic. Left to right : barley, wheat and canola crops with typical bleaching symptoms from pre-emergent application of Overwatch® Herbicide.

Herbicide crop effect

Many commercial pre-emergent herbicides may cause effects on the crop through root pruning, reduction in crop vigour or reduced plant numbers.

Early in a season, bleaching is sometimes caused by Overwatch® Herbicide.

Bleaching is a generic term used to describe a crop symptom where the leaf colour changes from green (normal) to a lighter shade. Bleaching can be complete (whole leaf) or partial (e.g. leaf edges). It can occur on all leaves, or just some.

Bleaching is not unique to Overwatch® Herbicide and is caused by various herbicide modes of action. Bleaching can be irreversible, or transient in nature. In the case of Overwatch® Herbicide, bleaching is transient in early crop stages under typical growing conditions.

The level of bleaching may vary, but a combination of positional selectivity (keeping treated soil away from the seedling) and crop selectivity (the crop's ability to metabolise the herbicide) makes Overwatch® Herbicide safe to wheat (including durum), barley and canola when applied as directed.

Crops treated with Overwatch® Herbicide, applied in accordance with label instructions, may exhibit some degree of transient bleaching but will recover under normal growing conditions.

In serious cases of overdosing or unfavourable conditions, phytotoxicity can also lead to stunting and a reduction in crop plant populations (or thinning).

Knife point press wheel (KPPW) sowing is the only recommended sowing system and it is used to ensure positional separation between the seed and herbicide. It is important to note the seeding point is an important part of delivering positional selectivity in the furrow. A knife point is defined as being a narrow point without wings or inverted T. When using 'winged' points such as splitter boots, the seed is placed into the side of the furrow, which may compromise the positional separation required between the treated soil and seed to provide a higher level of crop safety (e.g. you may see increased levels of transient bleaching in the more sensitive crops such as barley). Refer to the Overwatch® Herbicide label for further advice on how to minimise the risk of crop phytotoxicity.

2020 Forbes demonstration site

Trial ID: 2020-OW-WH-GD-YLD-NSWN-334

Date sown : May 12, 2020

Crop type : Wheat (Beckom)

Treatment : Overwatch® Herbicide @ 1.25 L/ha + Gramoxone# 250 @ 1.6 L/ha vs trifluralin @ 1.6 L/ha + Gramoxone# 250 @ 1.6 L/ha.

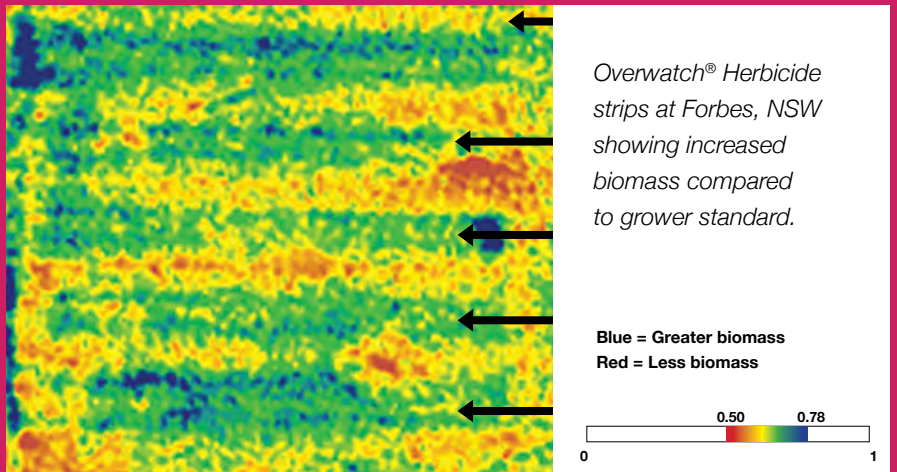
Aim: To compare the crop safety of Overwatch® Herbicide with the grower standard (trifluralin @ 1.6 L/ha) on a commercial scale using knife point press wheel (KPPW) seeding system.

During this trial, a 50mm rainfall event washed herbicide treated soil into the sowing furrow.

The Overwatch® Herbicide treated crop showed some transient bleaching but there weren't any plant establishment or crop development effects observed, and the crop grew out of the bleaching rapidly. However, the trifluralin treated crop showed reduced crop biomass which persisted throughout the season. The need to maintain spatial separation between the seed and trifluralin treated soil to minimise emerging seedling damage is well known and this trial demonstrated Overwatch® Herbicide's relative crop safety. The difference in crop growth, visually observed by the servicing agronomist in the paddock, was confirmed with NDVI imaging.

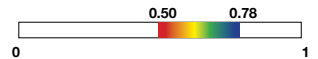


Overwatch® Herbicide demonstration at Forbes, NSW showing increased biomass compared to grower standard (foreground).

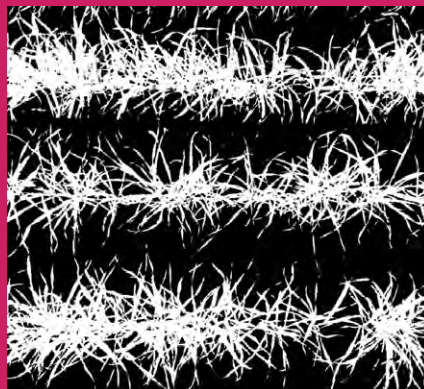


Overwatch® Herbicide strips at Forbes, NSW showing increased biomass compared to grower standard.

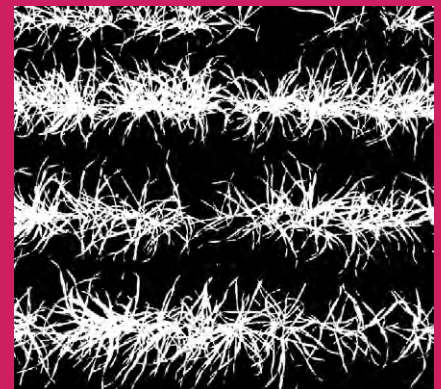
Blue = Greater biomass
Red = Less biomass



Canopeo is an app tool for estimating crop development by measuring the fraction of ground area covered by crop canopy. The images below, taken seven weeks after sowing, show that the canopy cover of Overwatch® Herbicide was 39% compared to the grower standard of 28%.



*Overwatch® Herbicide
(39% Cover)*



*Grower standard
(28% Cover)*

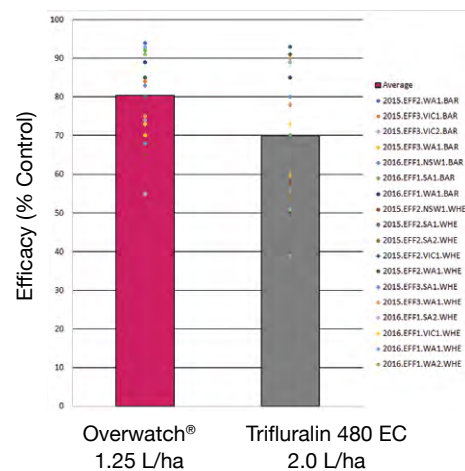
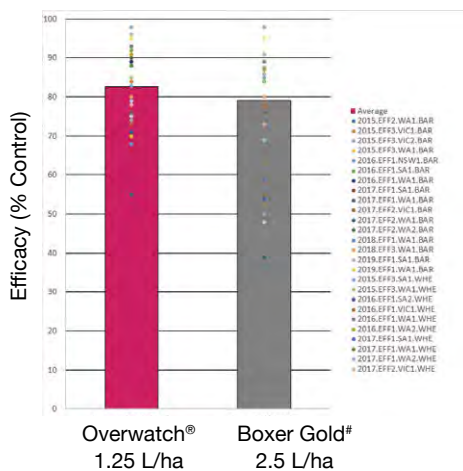
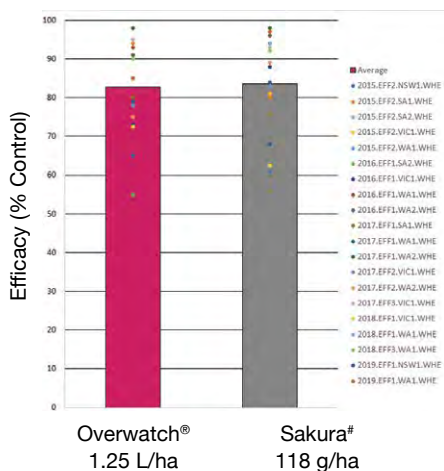
Control of annual ryegrass with Overwatch® Herbicide compared to industry standards

Annual ryegrass control in cereals

Percent control of annual ryegrass compared to other pre-emergent herbicides in wheat and barley.

Late season assessment (average 11 weeks after sowing). All side-by-side comparisons from 39 trials over 3 seasons (2015 – 2019).

Overwatch® 1.25 L/ha	Sakura# 118 g/ha	Overwatch® 1.25 L/ha	Boxer Gold# 2.5 L/ha	Overwatch® 1.25 L/ha	Trifluralin 480 EC 2.0 L/ha
Trials: 20 (wheat) Average density: 108 pl/m ² Overwatch® average control: 83% Sakura average control: 84%		Trials: 30 (16 barley, 14 wheat) Average density: 109 pl/m ² Overwatch® average control: 83% Boxer Gold average control: 76%		Trials: 18 (7 barley, 11 wheat) Average density: 115 pl/m ² Overwatch® average control: 80% Trifluralin 480 EC average control: 70%	

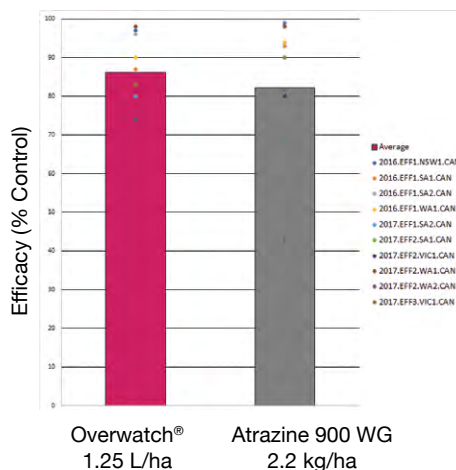
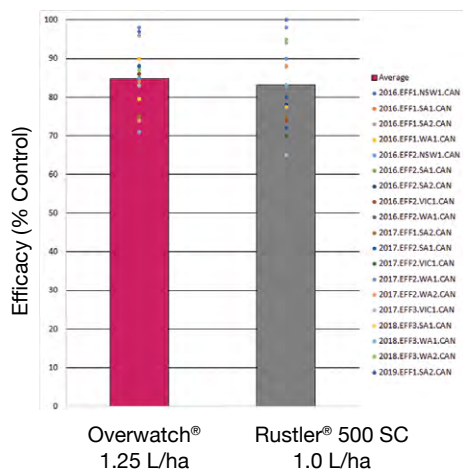


Annual Ryegrass Control in Canola

Efficacy of Overwatch® Herbicide against annual ryegrass compared to other pre-emergent herbicides in canola.

Late season assessment (average 11 weeks after sowing). All side-by-side comparisons from 14 trials over 2 seasons (2016 – 2017).

Overwatch® 1.25 L/ha	Rustler® 500 SC 1.0 L/ha	Overwatch® 1.25 L/ha	Atrazine 900 WG 2.2 kg/ha
Trials: 19 Average density: 147.5 pl/m ² Overwatch® average control: 85% Rustler 500 SC average control: 83%		Trials: 10 Average density: 130.3 pl/m ² Overwatch® average control: 86% Atrazine 900 WG average control: 82%	



Finding the best fit for Overwatch® Herbicide

Overwatch® Herbicide is a weed control solution for your paddock, not just for your crop

Being registered in several key crops and with good broad-spectrum activity, great use flexibility including a nil plant back to wheat, including durum wheats, barley, canola, faba beans and field peas, how do growers find the best fit?

1. Choose the field first

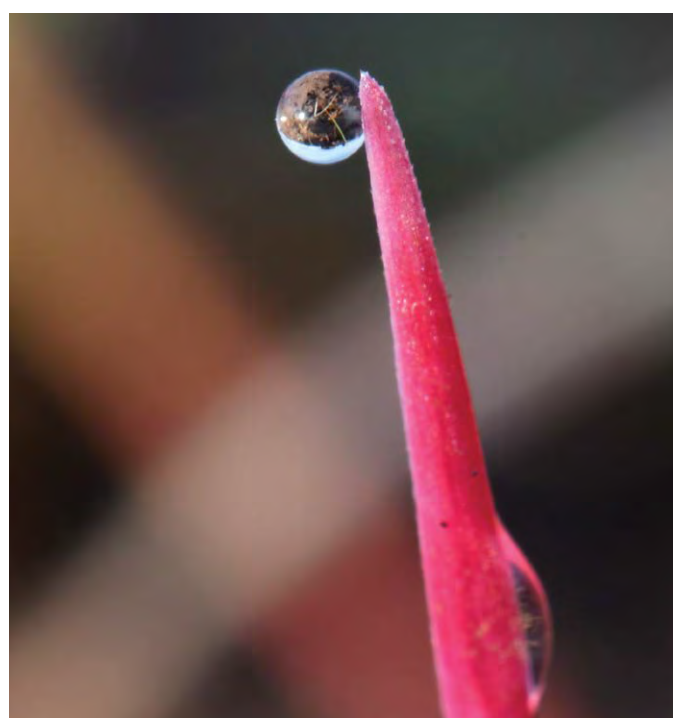
- Consider herbicide history and mode of action rotation requirements.
- Consider the weed spectrum.

2. Then decide the crop

- By choosing Overwatch® Herbicide first, you'll have more flexibility should planting decisions change due to seed availability, timing of the break or commodity price changes.
- Overwatch® Herbicide allows growers to change crops within the season without a complete change to the herbicide program.

3. Choose the mix partner that makes sense

- FMC supports the “mix and rotate” approach advocated by WeedSmart.
- Choose a partner herbicide based on the crop and the paddock weed situation to broaden weed spectrum, improve control of key weeds and to delay the onset of herbicide resistance.



- **For excellent control of annual ryegrass**
- **For outstanding length of control** picking up later season germinations of weeds including silvergrass, sowthistle and bifora.
- **For a unique mode of action**
Given the heavy reliance on Group 15 products (including Sakura#, Boxer Gold#, Avadex# Xtra and Tenet#) rotating to Overwatch® Herbicide's Group 13 mode of action helps to reduce the dependency on this Mode of action.
- **For market leading pre-emergent weed control in durum wheat.**

Weed spectrum and mix partners

SCENARIO 1. Second year of wheat, trifluralin resistant annual ryegrass present and wild radish becoming problematic.

SUGGESTION: Overwatch® Herbicide + Callisto#

- Overwatch® Herbicide gives excellent annual ryegrass control while reducing the risk of Group 15 resistance development.
- Overwatch® Herbicide and Callisto# partner to provide a higher level of pre-emergent wild radish control.
- Consider harvest weed seed control, including seed destruction or chaff lining to stop weed seed set.

SCENARIO 2. Durum wheat, heavy annual ryegrass population with bifora also present.

SUGGESTION Overwatch® Herbicide + TrifluX#

- With excellent crop safety in durum wheat, Overwatch® Herbicide offers the best standalone pre-emergent control of annual ryegrass available for durum wheat.
- The addition of trifluralin will assist in early season control of annual ryegrass, giving a greater overall result under heavy weed pressure.
- Consider a hay or pasture phase to reduce the weed seed bank, setting the paddock up for a cropping phase.



Why Choose Overwatch® Herbicide for barley?

- The leading pre-emergent herbicide for annual ryegrass control in barley.
- For greater efficacy and weed spectrum compared to current standards, with up to 12 weeks residual control.
- For unique mode of action – Introduce a Group 13 to allow a break from products containing a Group 15 MOA herbicide (e.g. Arcade[#], Boxer Gold[#]).

Weed spectrum and mix partners

SCENARIO 1. Annual ryegrass history in a block planted to canola, however a combination of a dry start and poor germination require the grower to spray a knockdown and re-sow at a later timing.

SUGGESTION: Overwatch® Herbicide

- With a nil plant-back period to wheat, barley, canola, faba beans and field peas, Overwatch® Herbicide gives you the option to re-sow with any one of these crops.
- Use of Overwatch® Herbicide allows flexibility in the case of late re-sowing wheat or barley.

SCENARIO 2. A combination of wild oats, bifora and trifluralin resistant annual ryegrass are becoming a problem after two years of wheat.

SUGGESTION: Overwatch® Herbicide + Avadex[#] Xtra

- Overwatch® Herbicide is extremely efficacious against bifora.
- Mixing two modes of action, Overwatch® Herbicide's Group 13 and Avadex[#] Xtra's Group 15, gives excellent control of annual ryegrass and wild oats.



Why Choose Overwatch® Herbicide for canola?

- The leading pre-emergent herbicide for control of annual ryegrass.
- For suppression of wild radish.
- An outstanding weed control solution in combination with herbicide tolerant canola systems including Clearfield[#], Roundup Ready[#] and Triazine Tolerant.

Weed spectrum and mix partners

SCENARIO 1. Trifluralin resistant annual ryegrass with heavy population of wireweed in triazine tolerant canola.

SUGGESTION: Overwatch® Herbicide + atrazine

- Where previously trifluralin would have been included in the mix to help control the wireweed, now Overwatch® Herbicide can be used with excellent control of wireweed.
- A combination of atrazine and Overwatch® Herbicide provides excellent control of trifluralin resistant annual ryegrass populations.

SCENARIO 2. A field requires a rotation into a Roundup Ready[#] Canola system to help management of problematic wild radish.

SUGGESTION: Overwatch® Herbicide + Crucial* Herbicide

- The unique ability of Overwatch® Herbicide to suppress wild radish in canola takes some pressure off glyphosate in this system.
- Overwatch® Herbicide's length of control allows growers to optimise the timing of later season glyphosate applications.

*These scenarios are specific to the crop mentioned. Refer to the Overwatch® Herbicide label for details relating to all crops.



Why Choose Overwatch® Herbicide for Faba beans or Field peas?

- The leading pre-emergent herbicide for control of annual ryegrass.
- For control of sow thistle/ milk thistle, wireweed and bifora and suppression of wild radish and prickly lettuce.
- An outstanding weed control solution in combination with a triazine herbicide or in front of an imidazoline tolerant herbicide system.

Weed spectrum and mix partners

SCENARIO 1. Planting Field peas with Group 1 resistance annual ryegrass and a heavy population of broadleaf weeds following a wet spring the year prior.

SUGGESTION: Overwatch® Herbicide + Terbyne# Xtreme

- Where previously a clethodim would have been included in the mix to help control the ryegrass post-emergent, now Overwatch® Herbicide can be used to provide excellent pre-emergent control of annual ryegrass.
- A combination of Terbyne# and Overwatch® Herbicide provides excellent control of a wide range of grass and broadleaf weeds ensuring the crop is on track to optimise its full yield potential.

SCENARIO 2. Planting imidazoline tolerant Faba beans with Group 2 resistance annual ryegrass and a moderate population of brome grass.

SUGGESTION: Overwatch® Herbicide + TrifurX# fb Intercept#

- With excellent crop safety, Overwatch® Herbicide offers the best standalone pre-emergent control of annual ryegrass available for faba beans.
- The addition of trifluralin will assist in providing a higher level of control partially compensating for the reduced crop competition to provide a cleaner crop come harvest.
- While Overwatch® Herbicide will provide suppression of brome grass, an early post emergent application of a registered imidazoline herbicide will ensure any escapes are controlled.



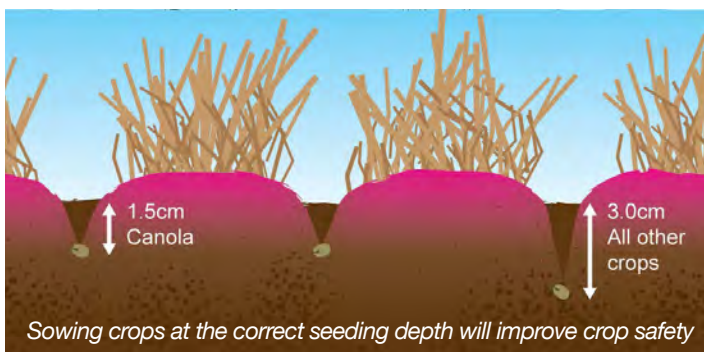
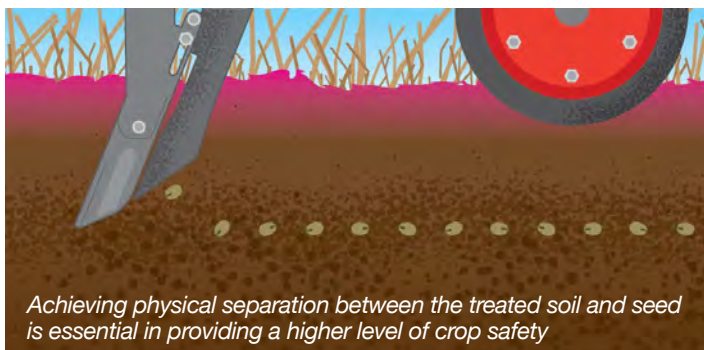
Applying Overwatch® Herbicide

Overwatch® Herbicide should be applied up to three days prior to sowing with canola at an ideal depth of 1.5 cm and a minimum of 3.0 cm below the soil surface for all other crops. This requirement is to minimise phytotoxicity to the emerging crop. Sowing with knife points and press wheels is regarded as the safest sowing configuration when using Overwatch® Herbicide. A knife point is defined as a narrow point without wings or Inverted T (e.g. splitter boots). Crop safety when using disc seeding systems is variable based on seed placement and influence of stubble, causing insufficient soil cover to the seed.

Overwatch® Herbicide should be applied prior to sowing and incorporated by sowing using knife point and press-wheel equipment. Incorporation with a knife point and press-wheel may result in reduced weed control in the drill row. If using a knife point and press-wheel planter, adjust working speed to avoid excessive soil throw into the adjoining seeding row.

DO NOT use disc-seeding systems when sowing barley or canola.

Best results are achieved when Overwatch® Herbicide is applied to a moist soil profile and when sowing occurs soon after application. Weed control may be significantly reduced where there is insufficient soil moisture to mobilise the active for uptake by the germinating weed. Weeds germinating from depth, weeds about to emerge or emerged weeds not controlled by knockdown herbicides may also not be controlled by Overwatch® Herbicide.



Efficacy of Overwatch® Herbicide can be reduced by the following factors (alone or in combination):

- Excessively cloddy soil which creates shadow areas that do not allow for uniform spray coverage of soil.
- Weed seeds germinating from moist soil deeper in the profile or seeds that germinate from the base of an overturned clod of soil which have no treated soil to pass through.
- Late germinating weeds.
- Poor performance of the knockdown herbicide application on established weeds. Overwatch® Herbicide does not control established weeds.
- Heavy rainfall causing run-off that removes the active herbicide from the desired soil area. Erosion of treated soil will also cause gaps in soil coverage, allowing weeds to germinate unhindered.
- A stubble load heavy enough (>50% ground coverage) to restrict the amount of active ingredient reaching the soil. This is especially true in cases where the stubble is lying flat on the ground.
- Paddocks covered in ash following stubble burning.
- Insufficient soil moisture to move the active ingredient within the soil for ready uptake. This greatly depends on soil type, however, in dry conditions this factor will be amplified where clay content is over 35%.
- IBS application method displacing treated soil away from the seed furrow therefore reducing the amount of active present in the seed furrow, or on the 'shoulder' of the furrow. While this seed to treated soil separation is important in providing a higher level of crop safety, it also explains why weeds can often be found within the seed furrow.

Crop selectivity of Overwatch® Herbicide can be reduced by the following factors (alone or in combination):

For all crops, there may be some risk of interim crop phytotoxicity. In most situations, phytotoxicity is expressed as bleaching of the older leaves. The effect is transient and generally localized as the new leaves emerge unaffected. Crop bleaching disappears and there isn't any yield penalty.

In serious cases of overdosing or unfavourable conditions, phytotoxicity can also lead to stunting and a reduction in crop plant populations (or thinning). Incidences of elevated crop phytotoxicity may occur in the following situations:

- Overlapping of spray swaths effectively doubling the desired application dose rate.
- Heavy rain, irrigation, or strong wind soon after planting causing treated soil erosion or solubilised active moving into the seeding furrow concentrating Overwatch® Herbicide on top of the germinating crop seedling
- High/heavy rainfall events in light soil types with low organic content leaching the active ingredient into the crop's root zone. This situation may also occur if Overwatch® Herbicide is applied to dry soil with limited soil/carbon absorption taking place. In light soils, prolonged, transient bleaching of crops can still occur >1 month after application if a heavy rainfall event occurs.
- Increased phytotoxicity may be observed when crops are stressed due to various factors such as:
 - exposure to other herbicides used in a tank mix, which may be causing a reduction in crop establishment, vigour, or development (see COMPATABILITY, below)
 - excessively wet / waterlogged soils, drought conditions, unseasonal heat, severe frost
 - crop disease, nematode or insect damage
 - seed treatment / weathered seed stock causing poor and/or slow germination
 - depth of seed placement causing delayed and slow germination
 - variation in seeding depth due to damaged, worn or incorrectly set-up tynes
 - soil type variation in the paddock that results in shallower seeding e.g. gravel rise

- excessive soil alkalinity or acidity and/or poor or unbalanced nutrient status
- compaction (e.g. wheel tracks or rollers).

- Above optimal operating speed of sowing – throwing treated soil into adjacent seed furrows
- Shallow seeding depth. Any seedlings germinating within 3 cm of soil may be at risk of increased crop phytotoxicity.

Heavy stubble load (>50% ground coverage) may lead to increased levels of phytotoxicity in the emerging crop.

When Overwatch® Herbicide is applied in conjunction with other herbicides which may cause crop phytotoxicity. It is the responsibility of the end-user to understand all risks associated with using other herbicides in a tank-mix with Overwatch® Herbicide. Ensure that all precautions on the label of the tank mix partner are closely followed. Refer to 'Compatibility' section of the product label for further detail on tank-mix compatibility or contact an FMC representative.

Spray equipment

Always ensure the sprayer is clean, using a suitable tank cleaner as directed. Defer to the most rigorous cleanout procedure if tank mixing with a partner. It is recommended that Overwatch® Herbicide be applied in at least 80 L/ha as a minimum coarse quality spray.

The most preferred application regime for Overwatch® Herbicide involves use of:

- Standard boom ground sprayers fitted with by-pass or mechanical agitation.
- TeeJet TTI nozzles operated at between 3 and 5 bar and angled backwards to direction of travel to reduce horizontal movement.
- Narrow nozzle spacing of 25 – 50 cm.
- A minimum application volume of 60 L water/ha on bare soil; 80L/ha in light standing stubble and 100 L/ha in heavy stubble situations.
- A maximum travel speed of 20 km/h, preferably 16 km/hr.
- The minimum boom height that still ensures double overlap.

Compatibilities

Overwatch® Herbicide, formulated as a suspension concentrate, is physically compatible with a wide range of herbicides. For the full list please scan the following QR code.



With the exception of Knockout Extreme[#], Overwatch® Herbicide is not compatible with all other high load glyphosate formulations present as potassium salt.

Overwatch® Herbicide is also not compatible with Devrinol-C[#] and the adjuvants Hot-up[#] and Outright[#] 770

As tank mix partner formulations can vary substantially over time with the same manufacturer as well as between manufacturers, all spray mixtures should undergo a jar test for physical compatibility prior to mixing commercial quantities.

Mixing - refer to the mixing and compatibility technote for further details

When mixing Overwatch® Herbicide in a tank with other products suited for pre-em application timing, the following mixing sequence should be followed:

1. Water conditioning agents;
2. Water dispersible granules (WG)/ Dry flowable products (DF);
3. Wettable powders (WP);
4. Flowables or suspension concentrates (e.g. Overwatch® Herbicide);
5. Emulsifiable concentrates (EC);
6. Water-soluble concentrates (e.g. glyphosate);
7. Surfactants and oils (e.g. Parachute®, BS1000[#]);
8. Soluble fertilisers.

Physical compatibility with Overwatch® Herbicide should be determined prior to mixing with a product not listed above, or when mixing Overwatch® Herbicide as a component of a 3-way tank mix. Always read the product label for the manufacturer's tank mix recommendations and to determine individual product compatibility options and correct mixing orders for individual products. If unsure, perform a jar test before proceeding to determine physical compatibility. Physical compatibility does not always guarantee biological compatibility and should be undertaken only with careful consideration.

Spray drift restraints

Specific definitions for terms used in this section of the label can be found at apvma.gov.au/spraydrift.

DO NOT allow bystanders to come into contact with the spray cloud.

DO NOT apply in a manner that may cause an unacceptable impact to native vegetation, agricultural crops, landscaped gardens and aquaculture production, or cause contamination of plant or livestock commodities, outside the application site from spray drift. The buffer zones in the buffer zone table below provide guidance but may not be sufficient in all situations. Wherever possible, correctly use application equipment designed to reduce spray drift and apply when the wind direction is away from these sensitive areas.

DO NOT apply unless the wind speed is between 3 and 20 kilometres per hour at the application site during the time of application.

DO NOT apply if there are hazardous surface temperature inversion conditions present at the application site during the time of application. Surface temperature inversion conditions exist most evenings one to two hours before sunset and persist until one to two hours after sunrise.

DO NOT apply by a boom sprayer unless the following requirements are met:

- Spray droplets are not smaller than a COARSE spray droplet size category
- Minimum distances between the application site and downwind sensitive areas are observed (see the table titled 'Buffer zones for boom sprayers in the 'Mandatory buffer zones' section below).

Buffer zones for boom sprayers

Application rate	Boom height above the target canopy	Mandatory downwind buffer zones				
		Livestock areas	Natural aquatic areas	Vegetation areas	Bystander areas	Pollinator areas
Up to a maximum label rate	0.5 m or lower	0 metres	Not required	35 metres	0 metres	0 metres
	1.0 m or lower	30 metres	30 metres	110 metres	0 metres	0 metres

Directions for use

Crops	Weed	Rate	Critical comments
Wheat, Barley, Canola, Field peas and Faba beans	Annual ryegrass (<i>Lolium rigidum</i>) Bifora (<i>Bifora testiculata</i>) Hog weed/wireweed (<i>Polygonum aviculare</i>) Lesser loosestrife (<i>Lythrum hyssopifolia</i>) Silvergrass (<i>Vulpia bromoides</i>) Sowthistle (<i>Sonchus oleraceus</i>) Suppression of: Barley grass (<i>Hordeum murinum</i>) Bedstraw (<i>Galium tricornutum</i>) Brome grass (<i>Bromus spp</i>) Capeweed (<i>Arctotheca calendula</i>) Phalaris (<i>Phalaris paradoxa</i>) Prickly lettuce (<i>Lactuca spp.</i>) Wild oats (<i>Avena fatua</i>), Wild radish (<i>Raphanus raphanistrum</i>)	1.25 L/ha	<p>Apply prior to sowing and incorporate by sowing (IBS) with knife point tynes and press wheels. Use seeding systems that can ensure accurate seed placement and adequate spatial separation of seed and herbicide. The minimum sowing depth is 1.5 cm for canola, or 3 cm for all other crops. Only use in knife point tyne and press wheel seeding systems when planting Barley and Canola. Best results are achieved when applied to a moist soil profile and sowing occurs soon after application. Refer to GENERAL INSTRUCTIONS for recommendations of best use.</p> <p>CAUTION: Where soil factors are typically expected to result in less vigorous or lower yielding crops, the use of Overwatch® Herbicide may result in incidences of elevated crop phytotoxicity.</p> <p>Efficacy of Overwatch® Herbicide can be reduced by the following factors (alone or in combination):</p> <ul style="list-style-type: none"> • Excessively cloddy soil which create shadow areas that do not allow for uniform spray coverage of soil. • Depth and distribution of weed seed. Weed seeds germinating from moist soil deeper in the profile may not be controlled. Also seeds that germinate from the base of an overturned clod of soil which has no treated soil to pass through. • Late germinating weeds. • Poor performance of the knockdown herbicide application on established weeds. Overwatch® Herbicide does not control established weeds. • Heavy rainfall causing runoff removes the active from the desired soil area. Erosion of treated soil will also cause gaps in soil coverage allowing weeds to germinate unhindered. • Heavy stubble load (>50% ground coverage) may restrict the amount of active reaching the soil. This is especially true in cases where the stubble is lying on the ground. • Paddocks covered in ash following stubble burning. • Insufficient soil moisture to move the active within the soil for ready uptake. This greatly depends on soil type, however, in dry conditions this factor will be amplified in soils with clay content over 35%. • IBS application timing displaces treated soil away from the seed furrow therefore reducing the amount of active present in the seed furrow or on the 'shoulder' of the furrow. <p>Avoid overlapping spray swaths. Especially in corners and headlands as this may increase crop phytotoxicity.</p> <p>Heavy stubble load (>50% ground coverage) may lead to increased levels of phytotoxicity in the emerging crop.</p> <p>Refer to 'General Instructions' in this label for more crop safety recommendations.</p>

Crop Rotation Recommendations

Crop	Minimum re-cropping interval	Comment
Wheat (including durum wheat), Barley, Canola, Faba Beans, Field peas	0 days	No re-cropping restrictions (0 mm rainfall)
Soybean, Cotton, Mungbean, Grain sorghum, Maize (in order of decreasing tolerance)	5 months	Minimum of 100 mm of rainfall and planting occurs on rising soil temperatures 15°C. For these crops sown 5 months after the application of Overwatch® there may occasionally be some transient crop bleaching, even with 100 mm of interim rainfall.
Chickpeas, Lentils, Vetch, Oats, Subclover, Clover	9 months	Minimum of 250 mm rainfall. For these crops sown the year after the application of Overwatch® there may occasionally be some transient crop bleaching, even with 250 mm of interim rainfall.
Medic, Lupins		Minimum of 350 mm rainfall. For lupins sown the year after the application of Overwatch® there may occasionally be some transient crop bleaching, even with 350 mm of interim rainfall.
Sunflowers	10 months	Minimum of 250 mm rainfall and planting occurs on rising soil temperatures 15°C. For sunflowers sown the year after the application of Overwatch® there may occasionally be some transient crop bleaching, even with 250 mm of interim rainfall.
Serradella	24 months	Minimum of 500 mm rainfall. For Serradella sown two years after the application of Overwatch® there may occasionally be some transient crop bleaching observed, even with 500 mm of interim rainfall.

Overwatch® Herbicide is predominantly broken down in the soil through microbial degradation. Microbial activity is typically favoured by moist and warm aerobic soils. Considerable variations in environmental, edaphic, and agronomic factors affecting soil microbial activity, mean that it is not possible to eliminate all risks and potential for damage to following crops.

Minimum re-cropping intervals for Overwatch® Herbicide have been recommended to minimise the risk of damage to rotational crops (see table). Rainfall less than the minimum rainfall required may result in extended re-cropping intervals. Prolonged dry periods and/or application to soils that do not favour breakdown (e.g. low organic matter) may impede microbial degradation, resulting in extended re-cropping intervals, even if interim rainfall exceeds the amount listed in the table below.

Phytotoxicity may also occur where crops are stressed (e.g. waterlogged, disease, etc) or not managed using good agricultural practices (e.g. excessive soil alkalinity or acidity and/or poor or unbalanced nutrient status) even if interim rainfall exceeds the amount listed in the table below.

Overwatch® Herbicide treated areas may be replanted to any of the specified crops after the interval and rainfall indicated in the adjacent table. For advice on crops and situations not listed in the table, contact FMC. If Overwatch® Herbicide has been tank mixed, observe the re-cropping intervals for the tank mixture product.

Withholding Periods

HARVEST: BARLEY, CANOLA, WHEAT, FABIA BEAN AND FIELD PEA: NOT REQUIRED WHEN USED AS DIRECTED

GRAZING / STOCKFOOD: BARLEY, CANOLA, WHEAT, FABIA BEAN AND FIELD PEA: DO NOT HARVEST, GRAZE OR CUT FOR STOCK FOOD OR FOR SEED FOR 8 WEEKS AFTER APPLICATION.

Frequently Asked Questions

What other herbicides can be tank mixed with Overwatch® Herbicide?

Overwatch® Herbicide is physically compatible with most commonly used pre-emergent herbicides and insecticides when applied as a tank mix. Correct mixing order, mixing practices and not over-filtering is critical. If unfamiliar with the intended tank mix, a properly performed small scale compatibility jar test can be useful. Please refer to the FMC Compatibility TechNote which can be found at www.overwatchherbicide.com

Can Overwatch® Herbicide be used in herbicide tolerant varieties of wheat, barley and canola?

FMC has trialed Overwatch® Herbicide in a number of herbicide tolerant varieties including Roundup Ready®, Triazine Tolerant, Clearfield® and multi trait Canola varieties. Overall performance, including crop safety and weed control, is comparable to the conventional varieties in wheat, barley and canola.

What is the risk of annual ryegrass developing resistance to Overwatch® Herbicide?

The active ingredient Bixlozone (Isoflex® active) belongs to the Isoxazolidinone chemical family, which is mode of action Group 13 (formerly Q). While the introduction of Bixlozone does provide a unique mode of action, weed scientists have been able to produce resistant biotypes under laboratory conditions, indicating that resistance to Overwatch® Herbicide can occur under field use. This lab work emphasises the importance of developing and implementing an integrated weed management plan to prolong the useful life of all herbicides including Overwatch® Herbicide. FMC advocates the use of the WeedSmart Big 6. By mixing and rotating herbicide groups, along with using cultural practices including harvest weed seed destruction, growers can extend the useful life of all herbicides.

Can I use Overwatch® Herbicide in a disc seeding system?

Sowing with knife points and press wheels is regarded as the safest sowing configuration when using Overwatch® Herbicide. Crop safety when using disc seeding systems is variable based on seed placement and influence of stubble, whereby causing insufficient soil cover to the seed. Use knife point tyne, press wheel seeding systems that can ensure accurate seed placement and adequate spatial separation of seed and herbicide. The ideal sowing depth for canola is 1.5 cm while the minimum sowing depth for all other crops is 3.0 cm.

DO NOT use disc seeders systems when sowing barley or canola. Only use a knife point & press wheel (KPPW) seeding systems and incorporate by sowing (IBS).

Can I use trailing harrows?

Crop safety is enhanced by the separation of treated soil from the emerging seed. When using harrows or other trailing equipment, treated soil can be displaced into the furrow that may result in elevated crop phytotoxicity.

How is Overwatch® Herbicide broken down in the soil?

Overwatch® Herbicide is predominantly broken down through microbial degradation. Microbial activity is typically favoured by moist, warm and aerobic soil conditions. Please read the label for plant-back restrictions.

Does Overwatch® Herbicide wash off stubble?

While Overwatch® Herbicide is relatively soluble and will wash off stubble, the amount of stubble or other ground cover will influence the consistency of the band of herbicide that reaches the soil. Reduced effectiveness or elevated crop phytotoxicity may occur when heavy stubble (>50% ground coverage) restricts the amount of active ingredient reaching the soil.

Can I roll my field peas and faba beans after applying Overwatch® Herbicide?

The impact of rolling faba beans and field peas was not assessed during the development of Overwatch® Herbicide. FMC has a small data set on rolling of faba beans and field peas following application and has not observed any significant impact on crop vigour or yield from rolling when Overwatch® Herbicide is applied and incorporated by sowing (IBS). It is important to maintain positional separation between the herbicide treated soil and the seedling; there are normal growing conditions free of biotic or abiotic stresses; Overwatch® Herbicide has been the only pre-emergent herbicide applied; the rolling of the crop has occurred within the correct developmental stages; and the soil is not too moist.



Overwatch[®]

HERBICIDE

This guide is not a substitute for reading the product label. Always read the label before use. Additional technical information for Overwatch[®] Herbicide can be found at www.overwatchherbicide.com

For further details, contact your local FMC representative

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*Llewellyn RS, Ronning D, Ouzman J, Walker S, Mayfield A and Clarke M (2016.) Impact of Weeds on Australian Grain Production: the cost of weeds to Australian grain growers and the adoption of weed management and tillage practices. Report for GRDC. CSIRO, Australia.

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