



ROTATIONAL CROP CONSTRAINTS FOR HERBICIDES USED IN AUSTRALIAN FARMING SYSTEMS



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A NATIONAL REFERENCE MANUAL FOR GRAIN GROWERS

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PLANT-BACK REQUIREMENTS FOR HERBICIDES USED IN AUSTRALIAN GRAINS PRODUCTION

Many herbicides used in agriculture can persist in the soil for extended periods of time. Herbicides designed to be used for residual weed control need to provide weeks or months of persistence in the soil to achieve their desired weed control objectives. Additionally, some herbicides that typically are used for post-emergent weed control and which are not typically considered 'residual' herbicides may also persist in the soil for some time after application.

It is important to understand the soil persistence of a herbicide and its potential impact on following crops in the rotation prior to the herbicides' use.

This guide has been developed to provide grain growers and advisers with relevant information to assist in planning the use of herbicides into crop sequences and in managing rotation constraints.

This guide is in two parts.

Part 1 - covers the principles of herbicide persistence in the soil and factors that influence herbicide breakdown. Understanding these factors may help to predict variability from year to year under different environmental conditions, to assist decision making in situations where labelled plant-back requirements have only just been met, or where statements on the herbicide label do not adequately cover the paddock situation.

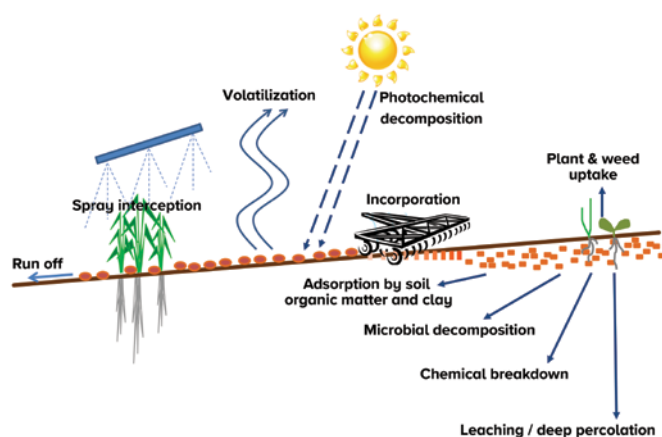
Part 2 - is a summary of label statements relating to directions for managing rotational crops.

PART 1 UNDERSTANDING HERBICIDE PERSISTENCE

Herbicide persistence in soil is affected by a wide range of factors. These include:

- Time of year of application / temperature
- Moisture
- Soil microbial activity
- Soil type / soil properties
- Soil structure
- Stubble, weed and crop presence
- Chemical properties of the herbicide
- Application rate and
- Crop agronomy.

Figure 1: Herbicide loss pathways for soil persistent herbicides



There are not just one or two simple factors that influence the length of herbicide persistence and some of these factors vary significantly from year to year. It should therefore be expected that herbicide persistence may also vary from year to year and from paddock to paddock, even when the same rate of herbicide is applied.

When herbicide suppliers develop plant-back statements for products, multiple sites and soil types will be tested under a range of different seasonal conditions. Labelled plant-back statements will usually take the more conservative results.

Consideration of the following factors generally assists in enhancing understanding herbicide breakdown in the soil.

Time of year of application / temperature

Two of the main degradation processes responsible for herbicide breakdown in the soil are microbial activity and hydrolysis (hydrolysis is only important for some herbicides). Both breakdown pathways rely on temperature and soil moisture.

Herbicide degradation will be strongly affected by temperature. Providing adequate soil water is present, degradation is far slower in the cool/cold months of winter and faster when temperatures are warmer.

Moisture

Moisture is arguably the factor which has the most significant impact on the rate of herbicide degradation in Australian cropping systems. Some more recent herbicide labels include recommendations for the minimum rainfall amount required in addition to minimum plant-back periods for different crops.

Adequate moisture is required for:

- Movement of herbicides into the soil
- Herbicide availability
- Degradation of herbicides that breakdown via a hydrolysis reaction
- Supporting microbial populations that are needed to degrade most herbicides
- Uptake by the roots of weeds, for root absorbed herbicides
- Good crop growth. Some herbicide is taken up by the crop and lost to metabolism within the crop. If crop growth is poor and metabolism slows, then additional herbicidal symptoms can often be seen.
- Leaching. Some mobile herbicides are 'lost' via movement down the soil profile and out of the root zone of crops and weeds.

Without adequate soil moisture these processes are reduced, breakdown slows and herbicide persistence increases. When soil becomes very dry, herbicide degradation may stop completely until further rainfall (or irrigation) is received.

Microbial degradation is the primary breakdown mechanism for most herbicides and adequate soil moisture (and temperature) over time is required to build and support the microbial populations needed for this process.

Too much soil moisture (i.e. waterlogging) can also stop aerobic microbial degradation. However, this typically does not last more than a few days in most Australian crop soils.



Rainfall and soil moisture is arguably the most important factor influencing herbicide degradation in Australian cropping systems. Photo: Mark Congreve.

Soil microbial activity

Microbial activity is one of the key processes responsible for herbicide degradation, with many different microbe families involved. Often different microbial families are required to degrade different herbicides.

Sustaining microbial activity in the soil requires moisture, temperature, oxygen, a food source (often stubble/organic matter) and preferably a relatively neutral pH. In cool/cold winters, the extent of microbial degradation occurring will be far slower than in warmer months.

In the warmer months, microbe populations usually build rapidly when soil moisture is adequate. However, as the soil dries, microbial populations also rapidly decline, and hence microbial breakdown slows or stops until further soil moisture is present. This combination of soil moisture and resultant microbial activity varies considerably across soil types and seasons and is the single largest factor that results in the variability of persistence of herbicides primarily reliant on microbial degradation for breakdown.

Aerobic microbes, which are believed to be primarily responsible for herbicide degradation, are usually found in highest numbers nearer the soil surface when moisture is good and there is an adequate source of oxygen. Mobile herbicides that move below the depth of aerobic microbial activity may persist for much longer.

The individual herbicide structure and behaviour in the soil determines the ability of microbes to degrade the herbicide. This may vary significantly, even within the same herbicide mode of action group. For example, within Group B herbicides,

tribenuron-methyl (e.g. Express®) is rapidly degraded and rarely provides plant-back complications. Others within this group may be fairly rapidly degraded, with limited persistence in most situations e.g. metsulfuron. Some are very persistent, for example imazapic, which is often very slow to be degraded and can persist for many months, or longer.

Where the same herbicide is applied frequently to the same field, it is possible that the resident microbial populations responsible for breakdown of that herbicide may increase. This can lead to faster degradation than is likely to be experienced on a similar soil type with no, or infrequent, use of that herbicide. This process is called 'enhanced microbial degradation'. While enhanced microbial degradation may reduce residual carryover, it is also likely that length of residual weed control will be reduced and weed control compromised.

Soil type / soil properties

At any given time after application, some of the herbicide in the soil will be bound to soil organic matter and colloids, with the remaining herbicide partitioning in the soil moisture. Herbicides with higher volatility can also be present as vapour in the soil pores.

Herbicide that is bound to soil colloids or organic matter is generally unavailable for plant (weeds and/or crop) uptake and for degradation. Only the unbound component is freely available for plant uptake and for degradation. As the unbound herbicide is lost (degraded, taken up by plants or leached down the profile), some of the previously bound herbicide is released back into the soil water, or soil pores.

This binding to soil and organic matter (sorption) and ongoing release (desorption) of previously bound herbicide over time is how soil active herbicides can provide residual control for extended periods.

Where a higher percentage of herbicide is initially bound, the herbicide often persists for longer as the desorption process takes longer to be exhausted e.g. herbicides used on heavier soils (clays) or higher organic matter soils will typically persist for longer.

The ratio of herbicide bound to herbicide freely available is influenced by:

- Soil type – light or sandy soils, or soils low in organic matter, will have less ability for the herbicide to bind
- Chemical properties of the herbicide – some herbicides bind more tightly to soil colloids and organic matter, while others prefer not to bind as strongly, leaving more herbicide in the soil water. Herbicides with tight binding stay close to where they are applied, which is generally near the soil surface in uncultivated situations. Herbicides with low binding are more mobile and more likely to move with the soil moisture.
- Soil moisture – higher levels of soil water are likely to see an increased percentage of herbicide in the soil water at any given time.

Soil pH is important for the breakdown of some herbicides:

Group B imidazolinone (Imi) herbicides – soil binding is pH dependent. In low pH (acidic) soils, binding increases and hence so does persistence. This results in increased plant-back periods in low pH soils.

Group B sulfonyleurea (SU) and Group C triazine herbicides – many herbicides within these groups are degraded by a hydrolysis reaction in addition to microbial degradation. The hydrolysis reaction is pH dependent. Under alkaline conditions (higher pH) the speed of this reaction slows (or stops), leaving only the slower microbial process to degrade soil residues. For this reason, plant-back periods for these herbicides are often longer on alkaline (higher pH) soils.

Soil profile and structure

Physical impediments in the soil profile may affect herbicide movement and subsequent degradation. For example, a significant change in the soil sub-horizon or the presence of a hard pan could lead to mobile herbicides concentrating at this barrier as they are unable to move deeper in the soil. As a result, the following crop may establish well in the topsoil where herbicide residues may have dissipated, but then show symptoms of herbicide uptake when roots reach the accumulated herbicide further down the profile.

This can be particularly problematic with Group B sulfonyleurea (SU) and Group C triazine herbicides should the change in sub-horizon also be alkaline, where breakdown via hydrolysis slows or stops.

Inversion tillage

Where inversion tillage is practiced, the subsoil at a depth of 20-30 cm is brought to the surface, replacing the top soil which is then placed at depth. Soil brought to the surface may have very different properties to the previous soil surface e.g. differences in pH and/or soil texture. In addition, the 'new' surface soil is likely to have less organic matter and microbial activity. Often a key reason for undertaking inversion tillage may be to ameliorate non-wetting soils. Improvement in soil wetting will also affect the distribution of herbicide within the surface profile.

It is therefore possible that this 'new' soil surface may behave very differently to the soil prior to the inversion tillage event. Depending upon the individual situation, it may be possible that more herbicide is freely available in the 'new' soil surface due to less organic matter and less microbial degradation, and hence greater risk of crop injury occurring.

Conversely, it is also possible that more herbicide binding occurs e.g. where clay is brought to the surface and sand placed at depth. In this example, more clay at the surface is likely to result in more herbicide binding and hence breakdown is likely to be slower, with persistence increasing.



Changes in clay content, organic matter and microbial populations following inversion tillage can substantially change herbicide uptake and persistence.
Photo: Evan Collis Photography.

Stubble, weed and crop presence

Where stubble is present at herbicide application, some spray deposit will be captured on the stubble. The amount of spray captured will be determined by the application set up, volume and height of stubble, and if the stubble is standing or lying flat. For herbicides that bind tightly to organic matter (e.g. the 'yellow' Group D dinitroaniline herbicides such as trifluralin and pendimethalin), herbicide captured on the stubble is unlikely to reach the soil. Other herbicides that do not bind tightly to organic matter are likely to be washed into the soil by the next substantial rainfall event. The properties of individual herbicides dictate the amount of rainfall required to move them to the soil.



Weeds and stubble present at application will intercept herbicide. Photo: Mark Congreve.

Weeds or crop present at application are likely to have a similar effect in capturing spray deposits. Herbicide entering live plants through their leaves further reduces how much herbicide is available to enter the soil after a rainfall event.

Some herbicides only have post-emergent use patterns on their labels and no crop rotational advice on the label. Typically, where these herbicides are applied early post-emergent there is normally a number of months that will pass before the crop is harvested and another planting opportunity arises, with this period being adequate to dissipate any soil residues – hence rotation crop statements are not normally required. However, should the crop be damaged (e.g. hail) soon after the herbicide was applied and a replant required, then the potential for soil residues should be considered.

Where selective herbicides are applied post-emergent to the crop, often the crop can metabolise and detoxify the herbicide before it damages the crop. However, certain post-emergent herbicides may not be fully metabolised before the crop hays off, when further metabolism stops. In this case, there may be herbicide residue remaining in the stubble post-harvest, with the potential for that herbicide to enter the soil as the stubble breaks down. Often this is not until the following year when the stubble is placed into contact with the soil and it decomposes. This may have implications for the next crop in the rotation. This has been particularly noted with the Group I pyridine herbicides (e.g. clopyralid, picloram, aminopyralid), with some labels recommending the removal or incorporation of treated stubble as soon as possible after harvest. Early incorporation of stubble soon after harvest allows time over the summer months for microbial degradation – provided moisture is present to drive this.

Chemical properties of the herbicide

Properties of the individual herbicide will have a significant influence on its persistence.

A herbicide's chemical structure dictates its water solubility, how tightly it binds, the breakdown pathway (microbial, hydrolysis or both) and how quickly it degrades.

The strength of binding to soil colloids and organic matter, in combination with the herbicide's solubility, will indicate if the herbicide is likely to be bound tightly, or freely mobile, or somewhere in between. The mobility/binding of a herbicide will affect its persistence and suggest where it is likely to reside in the profile after rainfall events.

Published DT_{50} values (DT_{50} = days of time for 50% loss, also referred to as a half-life) for herbicides provide an indication of the relative persistence of the herbicide. Herbicides with a short DT_{50} are likely to dissipate more rapidly, while higher DT_{50} values indicate increased persistence is likely. DT_{50} values will generally be presented as an average and a range, calculated across several different soil types and situations. It is worth noting the range of values, as this can provide some guidance as to their potential persistence under different conditions and soil types.



SOIL BEHAVIOUR OF PRE-EMERGENT HERBICIDES IN AUSTRALIAN FARMING SYSTEMS



2nd Edition



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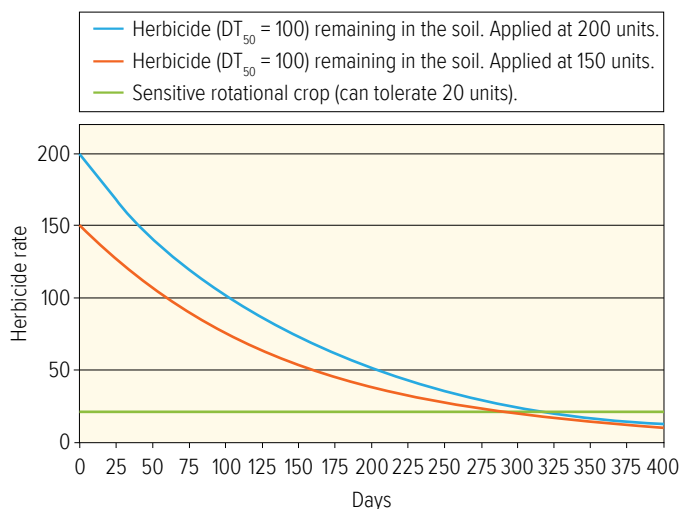
For further information on binding, solubility and DT_{50} information on herbicides used in Australian crops, see <https://grdc.com.au/SoilBehaviourPreEmergentHerbicides>

Application rate

Changing the applied herbicide rate changes the starting concentration of herbicide in the soil. However, due to the way herbicides degrade, changes in application rate often have less influence on plant-back constraints than many might expect (Figure 2).

Residual herbicides are generally applied at rates well in excess of the rate required to provide weed control. This enables residual weed control to be maintained for several weeks or months after application, while the herbicide undergoes degradation. For many herbicides, small to modest changes in application rate may not lead to a proportional change in the level of risk posed to rotational crops.

Figure 2: Influence of application rate on persistence.



This example shows a hypothetical herbicide with a DT₅₀ (days of time for 50% loss) value of 100 days and the corresponding breakdown curve when applied at 200 ‘units’ (blue line). If the sensitive rotational crop can tolerate 20 units of the herbicide (green line), then the rotational crop could not be planted for approximately 330 days after application of 200 units. Reducing the application rate to 150 units (orange line) i.e. a 25% reduction in application rate, only reduces the safe plant-back period by approximately 40 days in this example.

Typically, one or more of the other factors mentioned above (in particular, soil moisture over warmer months) is likely to have more influence on the speed of herbicide dissipation than minor changes in the rate applied.

Crop agronomy

Good agronomic practice in the following crop may assist in the crop outgrowing symptoms derived from low level herbicide residues. Practices that promote early growth and enhanced metabolic activity can help the crop to overcome short-term stresses. Simple things such as planting into a moist, warm seedbed, correct seed placement, using quality seed, selecting seed treatments that will enhance early growth rather than detract from it, good crop nutrition, non-compacted soil, and a rotation that promotes low levels of soil borne root diseases will all contribute to a crops ability outgrow minor stresses from a range of sources.

Frequently asked questions

“I have applied a certain herbicide and have just met the required plant-back directions on the label for the crop I wish to plant. How do I increase my confidence in making a planting decision?”

Thinking about the factors listed above should generally help provide confidence in decision making. For example, are many factors aligning to suggest that herbicide breakdown is likely to have been enhanced, or does the reverse apply i.e. many factors are suggesting breakdown is likely to have been slower?

As most herbicides rely on microbes and/or hydrolysis for degradation, consider how rainfall has fallen over the warmer months (spring, summer and early autumn) since the herbicide was applied. If the soil, particularly the soil surface, has remained moist for many weeks during this period, then herbicide degradation is likely to be more rapid. If the soil surface has had extended dry periods, or the required rainfall has fallen as one or two large falls (with substantial dry periods in between), then herbicide breakdown is likely to have been significantly slower, and the risk posed to following crops higher.

A small number of residual herbicides, typically those that are less mobile and bind close to the soil surface, may recommend an aggressive tillage prior to planting of rotational crops. This disperses herbicide that was previously concentrated at the soil surface and dilutes it through the soil profile to the depth of cultivation. This strategy is ineffective for mobile herbicides that primarily reside in the soil moisture phase.

The labels of some herbicides suggest a bioassay may be conducted before large scale planting of rotational crops. A bioassay consists of planting some seeds of the rotational crop into the soil potentially containing the herbicide residue, and monitoring emergence and growth over time. It should be noted that it may take time for symptoms to appear, especially with mobile herbicides which may be at depth in the soil profile and which may not be taken up by the seedling until roots have extended to the herbicide zone. Low level impacts that do not stop seed emergence, but which inhibit growth rate can sometimes be difficult to reliably identify by this technique.

“Can I conduct a soil test for residual levels?”

Some growers may consider conducting a soil test. Some challenges with soil tests include:

- Knowing where to test within the soil profile i.e. should soil be sampled from near the soil surface, or should sampling be taken from depth for more mobile herbicides?
- Where a soil test reports a quantifiable concentration of herbicide, there is still a need to understand if this level will damage the planned rotational crop. Often this information is hard to obtain as tests are often not calibrated for crop injury.
- It is also important to understand the sensitivity of the test conducted. For example, some herbicides (particularly Group B) are active at extremely low concentrations, so it is important that the sensitivity of the analysis can quantify herbicides at levels that may cause damage to rotational crops.

“I have previously applied a herbicide and have not yet met the required plant-back qualifications on the label for my rotational crop, but I wish to plant. What options do I have?”

Label directions provide the best possible advice to minimise the risk of injury to following crops. If label directions have not been met, then the best advice is to wait until labelled conditions are met. Alternatively, switch to a more tolerant crop where label conditions have been met.

In some instances, it may be possible to grow a ‘herbicide tolerant’ variety where soil residues are known to still be present. For example, CLEARFIELD® varieties have tolerance to soil levels of many imidazolinone herbicides.

“I want the option to double crop if seasonal conditions are favourable and hence wish to avoid herbicide residues where possible. If I cut the herbicide application rate in half does this mean the plant-back periods are also cut in half?”

NO. The application rate of residual herbicides will be well in excess of the rate required to provide weed control immediately after application. The herbicide will breakdown over time with many factors affecting the speed of this process. Application rate does have some effect on persistence, but this is often minimal compared to other soil and climatic factors (see Figure 2 above).

“I have applied a pre-emergent herbicide and then planted dry. The break of season did not occur as expected and there has now been a few weeks without rainfall to incorporate the herbicide or germinate the crop. Is there a rule of thumb that would indicate how much herbicide degradation has occurred and hence will a ‘top up’ be required before the next rain front?”

This is a very difficult question, with no simple answer.

Firstly, the rate of herbicide applied is usually significantly more than the amount required for actual weed control. Where there has been a minor delay in germination due to a late break it is highly likely that there will still be enough herbicide remaining in the soil to provide initial weed control following a ‘break’. In situations where there has been some level of degradation occurring before the break it is more likely that this will be reflected as a shorter length of residual control, rather than a reduction in initial weed control immediately following the ‘break’.

The magnitude of degradation occurring before the ‘break’ is extremely difficult to predict and will be highly variable. It will depend on the individual herbicide (in particular volatility, photodegradation, solubility, soil binding), the level of incorporation that occurred during application/planting, soil texture, stubble cover, soil moisture (i.e. degradation rates will be different in bone dry soil as opposed to soil with some moisture), temperature and any small rainfall events before the ‘true break’.

With so many factors involved, trying to provide a general ‘rule of thumb’ that would apply in most situations is impossible. Understanding the degradation factors covered above may give some insight into the level of degradation that may have occurred in a specific situation.

The GRDC publication ***‘Soil behaviour of pre-emergent herbicides in Australian farming systems – reference manual for advisers’*** provides more information on how pre-emergent herbicides interact with the environment. It can be found at www.grdc.com.au/SoilBehaviourPreEmergentHerbicides

PART 2 LABEL DIRECTIONS FOR SELECTED HERBICIDES IN RELATION TO ROTATIONAL CROPS

Part 2 of this guide lists the labelled plant-back statements for a range of commonly used herbicides in Australian grains production, where the label provides directions for use in relation to rotational crops. Not all herbicides have been included in this guide. **The absence of a herbicide from this guide SHOULD NOT be taken as an assumption that the herbicide is free of residual activity in the soil following application.** Always check individual product labels before use.

There are often several similar brands (or product names) of herbicides. It is not practical to list all herbicides by product name. Herbicides are listed in this guide alphabetically by their active ingredient. The active ingredient can be found on the front panel of the herbicide label, normally directly under the product name.

It is important to note:

- Statements in this guide have been taken from an example of an approved herbicide label at time of compilation (November 2018). The specific herbicide label referenced in this guide has been identified. **Herbicide labels may change over time. Always check the label on the container before use.**
- It is possible that different brands of a similar herbicide may have different plant-back statements on their individual approved labels. Always check the label on the actual container you are using.
- Some herbicides may have limited, or no directions on the label in relation to rotational crops. Herbicides without any labelled statements in relation to rotational crops have not been included in this guide. It **SHOULD NOT** be assumed that a lack of mention of plant-back constraints to particular rotational crop(s) on the label is an indication that no rotational restrictions apply. Where users are unsure regarding their specific situation, they should always seek professional advice. Contacting the manufacturer of the herbicide is normally a useful starting point.
- Certain post-emergent or 'short' residual herbicides may not have plant-back information on their product label, as they typically degrade satisfactorily when used as per the registered use patterns, and therefore are unlikely to pose a concern to following crops that would normally be planted. However, they may still have soil residual activity which may damage certain rotational crops if used outside of the stated label claims.

For example: A herbicide may only have labelled use patterns for early post-emergent in-crop use, with no rotational crop advice provided on the label. This use pattern would typically provide several months from application to the next possible planting opportunity after harvest, by which time soil residues are likely to have dissipated. There may be no need for rotational crop advice when used in this manner. However, this lack of rotational crop advice does not necessarily imply that the herbicide has no residual activity. Should the treated crop 'fail' soon after the herbicide application, and a replant be required (e.g. treated crop is damaged by hail and the grower wishes to replant) then soil residues may potentially impact the following crop.

- The absence of any rotational crop advice on the label of a herbicide that is only registered for use in-crop does not imply that the herbicide can be applied to fallow situations without impact on rotational crops.

2,4-D

Group I Herbicide

(Reference label: Nufarm Amicide® Advance 700 Selective Herbicide APVMA Approval No: 66167/116236)

Crop establishment

Amicide Advance 700 is recommended as a herbicide additive to weedmaster® DST (refer also to compatibility section for all compatible glyphosate formulations) for control of emerged weeds prior to crop establishment. When Amicide Advance 700 is applied prior to crop establishment, certain plant-back periods should be observed to ensure that the herbicide has degraded sufficiently to allow safe sowing of the intended crop. This process is largely influenced by moisture, temperature and certain soil characteristics and may be delayed particularly when conditions are cold and dry. Refer to the plant-back period table for specific information. In seasons of heavy weed growth, or where the following conditions apply, it may be necessary to further delay sowing until a suitable seedbed can be formed. Conditions which can delay crop germination and seedling development include;

- Heavy green or decaying weed growth incorporated into the soil;
- Soil compaction or crusting;
- Cold and wet soils;
- Deep seeding;
- Prior use of residual or pre-emergent herbicides.

To minimise these effects, it is suggested that:

- Weed bulk be reduced by grazing and cultivating to leave trash on the surface to dry out;
- A friable seedbed be produced by cultivation, where necessary;
- The use of pre-emergent herbicides to be avoided if they might contribute to reduced germination;
- A correct seeding depth be used.

The preferred alternative is to spray early to control any weeds in their less advanced stages and ensure the seedbed is in a suitable condition for early sowing when soil temperatures are not excessively cold.

2,4-D + florasulam

(See florasulam + 2,4-D)

2,4-D + picloram

(See picloram + 2,4-D)

2,4-D + picloram + aminopyralid

(See aminopyralid + picloram + 2,4-D)

Plant-back periods (days) for Amicide Advance 700

CROP	RATES		
	Up to 500mL / ha	500 to 980mL / ha	980mL to 1.5L / ha
Balansa clover	7	7	10
Barley %	1	1	3
Canola #	14	21	28
Chickpeas #	7	14	21
Cotton	10	14	21
Faba beans	7	7	10
Field peas	7	14	14
Lentils	7	7	10
Linseed	7	7	14
Lucerne	7	7	10
Lupins +	7	14	21
Medics	7	7	10
Narbon beans	7	7	10
Navy bean	10	10	14
Oats	3	3	7
Perennial ryegrass	7	7	10
Persian clover	7	7	10
Phalaris	7	7	10
Rice	7	7	14
Safflower #	7	14	21
Sorghum @	3	7	10
Soybean	14	14	21
Subterranean clover	7	7	10
Sunflower @	7	10	14
Triticale %	1	3	7
Vetch	7	7	10
Wheat %	1	3	7
White clover	7	7	10

IMPORTANT: WHEN APPLIED TO DRY SOILS AT LEAST 15mm (1/2 inch) OF RAIN MUST FALL PRIOR TO THE COMMENCEMENT OF THE PLANT-BACK PERIOD.

NOTES:

% In Queensland, no rainfall is required to fall prior to commencement of plant-back period for wheat, barley and triticale.

In Queensland, planting of canola, chickpeas and safflower must be delayed for at least 14 days following rainfall of at least 15mm.

@ In Central Queensland, when using 715mL/ha or less of Amicide Advance 700, the plant-back period for sorghum and sunflower is 1 day irrespective of rainfall.

+ In WA the plant-back period for lupins at all rates is 28 days

Aminopyralid + fluroxypyr

Group I Herbicide

(Reference label: Hotshot® Herbicide APVMA Approval No: 59173/60039)

Restrictions

Avoid double overlaps to reduce risk of injury to rotational crops the following season.

Minimum re-cropping periods

Aminopyralid remains active in the soil for extended periods depending on rate of application, soil type (clay content), rainfall, temperature, humidity, soil moisture and soil organic matter. The following tables show plant-back periods to particular crops following application of Hotshot in different areas in Australia.

Northern New South Wales & Queensland

Plant-back periods for rotational crops following application of Hotshot for rates up to 750 mL/ha on black cracking clay soils. These plant-back periods are based on normal rainfall pattern. During drought conditions (or when rainfall is less than 100 mm for a period of 4 months or greater) the plant-back period may be significantly longer.

Winter Crop	Plant-back Period (months)	Summer Crop	Plant-back Period (months)
Wheat	4	Sorghum	3
Barley	4	Mungbean	5
Canola	4	Sunflower	5
Chickpea	6	Soybean	5
Faba bean	6	Cotton	9
Lucerne	6		

Southern New South Wales, Victoria, South Australia & Western Australia

Plant-back periods for rotational crops following application of Hotshot for rates up to 500 mL/ha.

Crops	Plant-back Period (months)
Barley, Canola, Wheat	9
Chickpea, Faba bean, Field pea, Lucerne, Lupin, Medic, Subterranean clover	20

Note: Before using Hotshot in tank mixes with other herbicides, check the plant-back information on all product labels. The most residual product, i.e. the product with the longest plant-back period, will determine the time between spraying and planting the next crop.

Protection of crops, natives and other non-target plants

DO NOT use on land to be cultivated for growing susceptible crops for up to 20 months of applying Hotshot, except where indicated in the MINIMUM RE-CROPPING PERIODS section of the GENERAL INSTRUCTIONS. Legumes, vines, vegetables, cotton, tomatoes, ornamentals and many other plants are highly susceptible to this herbicide during both growing and dormant periods. Cereal crops, canola and grasses can be

sown safely after using Hotshot. This product will kill legumes (clovers, medics) present in the crop at the time of spraying. In the season, following application of this product the regeneration or establishment of sensitive legumes (clover, medics, peas, and lupins) may be adversely affected by soil residues.

Management of residues in compost, mulches and animal waste

DO NOT cut pasture for hay or silage production within 6 months of application, where it is intended for use off-farm.

DO NOT cut cereals intended for hay or silage production within 6 weeks of application, where it is intended for use off-farm.

DO NOT use treated plant material to make compost, mulches or mushroom substrate. **DO NOT** send straw from treated crops off-farm for these purposes or for animal bedding.

DO NOT send animal manure, dairy shed and feed pad effluent that has been collected from animals grazing or fed crops treated within the previous 6 months (pasture) or 6 weeks (cereals) off-farm. Spreading/irrigating this manure/effluent may cause damage to clover and other susceptible plants.

DO NOT send compost made from animal waste that has been collected from animals grazing or fed crops treated within the previous 6 months (pasture) or 6 weeks (cereals) off-farm. Such compost may cause damage to clover and other susceptible plants.

DO NOT apply animal waste (e.g. manure, slurry) collected from animals grazing or fed crops treated within the previous 6 months (pasture) or 6 weeks (cereals) to susceptible plants or land to be used to grow susceptible plants.

DO NOT grow susceptible plants within the relevant plant-back period in fields treated with manure/effluent from farms where animals have grazed or been fed treated plants until a field bioassay shows there are no residues in the soil at levels injurious to the susceptible plants (see the crop rotation section).

To promote herbicide decomposition, manure should be evenly incorporated in the surface soil. Breakdown of residues in decomposing plants or manure is more rapid under warm, moist soil conditions and may be enhanced by supplemental irrigation.

Soil bioassay

A simple bioassay can be conducted by collecting at least 10 spade spits of soil to a depth of 200 mm from around the paddock and thoroughly mixing the soil together. Place some of this soil in a shallow container to a depth of 3-5 cm and sow 100 seeds of the susceptible plant to be grown (subterranean or white clover is a good indicator plant where it is not practical to use the susceptible plant) into the soil. Keep in a warm and well lit location and ensure the soil does not dry out. After crop emergence, check the number of plants that have germinated and seedling vigour.

Symptoms of Hotshot residues include non-germination or low plant emergence, leaf cupping, leaf whitening, stem elongation and twisting. If these symptoms occur – do not grow the susceptible plant. Repeat the bioassay again after a further time interval.

Aminopyralid + metsulfuron-methyl

Group I + B Herbicide

(Reference label: Stinger® Herbicide APVMA Approval No: 69370/100366)

Management of residues in compost, mulches and animal waste

DO NOT send treated crops off-farm as hay, silage or for use as animal bedding. Aminopyralid residues from treated plants may pass into animal manure, composts, mushroom substrates, mulches and cause injury to sensitive broadleaf plants. **DO NOT** spread manure from animals that have grazed or consumed forage or hay from treated areas on land used for growing susceptible broadleaf crops.

Stubble from treated crops

Ensure that harvesters effectively spread crop straw and do not leave a heavy 'header trail' after harvest. Burn (if legal in the area) or bale and remove, slash or incorporate stubble as soon as practical after harvest and for as long as possible before planting next year to allow microbial breakdown of any residues in straw. Heavy stubble loads may carry more residues into the following season. Where heavy stubble burdens and/or non-wetting soils exist and less than the recommended amount of rain has fallen from application to planting the susceptible crop (see above), only plant a winter or summer cereal.

Where Stinger Herbicide residue carryover is suspected and susceptible crops are to be planted, test the treated area as follows:

Field bioassay – where rain allows, plant a small area of the susceptible crop 4 to 6 weeks before desired planting date and take note of any symptoms of injury. If any herbicide symptoms are observed, only plant a cereal crop (see recommendations for northern and southern Australia below).

Pot bioassay – lentils are highly sensitive to Stinger Herbicide and therefore are a good test species for a bioassay. Where not practical to do field bioassay, plant a small number of seeds of the susceptible crop into pots containing soil from the treated field. Do this test 4 to 6 weeks before desired planting date. If any herbicide symptoms are observed, only plant a cereal crop (see recommendations for northern and southern Australia below).

Planting crops following use of Stinger herbicide in previous cereal crop

Planting crops 'dry' without appropriate rain (see below) in the fallow prior to planting increases the risk of injury to susceptible crops. This practice should be avoided or only plant a cereal crop. In severely dry conditions, where less than 30% of average annual rainfall and/or less than the minimum rain has fallen between application and planting the next year (see below), only plant a cereal crop.

Susceptible crops and plants include, but are not limited to, canola, chickpeas, clovers, cotton, faba beans, field peas, flowers, fruit trees, hops, lentils, lupins, lucerne, medics, ornamentals, potatoes, peas, safflower, shade trees, subterranean clover, sugar beet, tobacco, tomatoes, vegetables, vetches, vines (grape and kiwi fruit), wattles and white clover. Field peas, faba beans, lentils and vetches are particularly susceptible.

Crop rotation recommendations

Use of Stinger Herbicide may prevent early re-establishment of many crops including grasses after treatment. The period that residues persist in the soil will vary according to site conditions such as climate, soil pH, presence of soil microorganisms, soil temperature, soil moisture and the rate used. Breakdown is fastest in warm, wet, acid soil and slower in cold, dry, alkaline conditions.

Land previously treated with Stinger Herbicide should not be rotated to crops other than those listed in the table below. Tolerance of other crops (grown through to maturity) should be determined on a small scale before sowing into larger areas (see field bioassay in PROTECTION OF CROPS, NATIVE AND OTHER NON-TARGET PLANTS section of the label). The Stinger Herbicide treated area may be replanted to any of the specified crops after the interval indicated in the following table:

Plant-back periods

Users should be aware that there could be varietal differences in crop sensitivity and should seek the most recent data from the registrant.

Soil pH	Crops	Rainfall*	Plant-back period
5.6-8.5	Wheat, Barley, Triticale	50-100 mm	4 months
	Canola	> 300 mm	9 months
		< 300 mm	20 months
	Faba bean	All	20 months
8.6 and above	Tolerance of crops (grown through to maturity) should be determined on a small scale, in the previous season, before sowing to larger areas.		

* Rainfall – must be sufficient and of distribution to ensure soil wetting to 100 mm for longer than 1 week, for 4 month plant-back time. For 9 month or longer plant-back times, at least 300 mm must have fallen between treatment and desired replant time, with more than 100 mm of that over the warm months of summer to autumn to ensure soil wetting to depth of 100 mm for longer than 2 weeks.

For winter crops such as chickpea, linseed, lucerne, medic, oats, safflower and subterranean clover and for summer crops such as cotton, Japanese millet, maize, mungbeans, panorama millet, sorghum, soybean, sunflower, and white French millet please consult Dow AgroSciences for advice on plant-back periods.

Aminopyralid + picloram + 2,4-D

(See picloram + aminopyralid + 2,4-D)

Aminopyralid + picloram + triclopyr

(See picloram + triclopyr + aminopyralid)

Atrazine

Group C Herbicide

(Reference label: Titan Atrazine 900 WG Herbicide APVMA Approval No: 62191/0209)

To avoid triazine carry-over

On acid soils (pH less than 6.5): The maximum rate of Atrazine 900 WG or Simazine 900 WG or a combination of the two products to be applied to the crop during the growing season is 2.2 kg/ha.

On alkaline soils (pH greater than 6.5): The maximum rate of Atrazine 900 WG or Simazine 900 WG or a combination of the two products to be applied to the crop during the growing season is 1.1 kg/ha.

Post-emergence use - It is recommended that Atrazine 900 WG only be used, and at rates of 1.1 kg/ha or less, on both acid or alkaline soils.

Protection of crop, native and other non-target plants

DO NOT plant crops other than those recommended on this label for at least 6 months following treatments of this product at rates up to 1.4 kg/ha and for 18 months following treatments of 1.4 to 3.3 kg/ha.

Atrazine + s-metolachlor

Group C + K Herbicide

(Reference label: Primextra Gold® Herbicide APVMA Approval No: 50885/59494)

Protection of crop, native and other non-target plants

DO NOT plant crops other than maize, sweet corn, sugarcane or Concept II treated sorghum within 6 months of application of Primextra Gold at rates up to 3.2 L/ha and for 18 months at rates of Primextra Gold above 3.2 L/ha. On soils with a pH (CaCl₂) greater than 7, a bioassay or analytical test should be undertaken before sowing susceptible crops.

Bicyclopyrone + bromoxynil

Group H + C Herbicide

(Reference label: Talinor® Herbicide APVMA Approval No: 82256/111143)

Crop rotation recommendations

Minimum re-cropping intervals should be observed following the use of Talinor. Talinor is more rapidly degraded at higher soil pH, so carryover is more likely on acid soils.

Minimum rainfall or irrigation requirements apply for the stated re-cropping intervals to apply. Lower rainfall amounts may necessitate an extended re-cropping period. If patchy, light rainfall events occur with extended periods of dry weather between, sufficient soil moisture for effective breakdown of Talinor may not be achieved, even if the minimum rainfall amount is achieved.

Plant-back to Winter Crops and Pastures

Crop	Talinor rate (mL/ha)	Minimum rainfall or irrigation required	Re-cropping interval
Wheat, Barley, Oats, Triticale, Canola, Lupins, Vetch, Faba beans, Lentils, Field peas, Subterranean clover*, Medic* and Lucerne*	Up to 1200	250 mm	9 months

* Where Talinor is applied at a rate of 1200 mL/ha on acid soils, seedling vigour reduction and reduced plant stand may occur. However, impacts on seedling vigour are expected to be transient and no long-term impact is likely.

Areas that receive double rates, such as boom overlaps, may exhibit increased crop effect. Generally, this is a bleaching or yellowing of the crop and is expected to be transient but may be accompanied by a crop biomass reduction.

Plant-back to Summer Crops and Pastures

Crop	Talinor rate (mL/ha)	Minimum rainfall or irrigation required	Re-cropping interval
Maize, Pigeon pea, Cowpea, Mungbean, Adzuki bean, Sorghum, Cotton*, Soybean*, Sunflower*, Safflower**	1200	150 mm	4 months

* Where Talinor is applied at a rate of 1200 mL/ha, crop tolerance may be reduced if waterlogging occurs in the first 6 weeks after planting. However, phytotoxicity (in the form of bleaching or chlorosis) and crop biomass reductions are likely to be transient with full recovery expected and no impact on crop yield.

** Where Talinor is applied at a rate of 1200 mL/ha, crop tolerance may be reduced if waterlogging occurs in the first 6 weeks after planting. Phytotoxicity (in the form of bleaching or chlorosis) and crop biomass reductions are possible along with minor reductions in crop yield.

Areas that receive double rates, such as boom overlaps, may exhibit increased crop effect. Generally, this is a bleaching or yellowing of the crop and is expected to be transient but may be accompanied by a crop biomass reduction.

Bromoxynil + bicyclopyrone

(See bicyclopyrone + bromoxynil)

Bromoxynil + diflufenican

(See diflufenican + bromoxynil)

Bromoxynil + diflufenican + MCPA

(See diflufenican + bromoxynil + MCPA)

Bromoxynil + picolinafen

(See picolinafen + bromoxynil)

Bromoxynil + picolinafen + MCPA

(See picolinafen + bromoxynil + MCPA)

Bromoxynil + pyrasulfotole

(See pyrasulfotole + bromoxynil)

Butroxydim

Group A Herbicide

(Reference label: Factor® WG Herbicide APVMA Approval No: 61984/106460)

Protection of crop, native and other non-target plants

DO NOT plant cereal crops for a period of 4 weeks after application of Factor WG Herbicide.

Chlorsulfuron

Group B Herbicide

(Reference label: Tackle® WG Herbicide APVMA Approval No: 59842/62490)

General Instructions

Tackle WG is a systemic herbicide which acts by inhibiting cell division and growth in the tips of roots and shoots of sensitive plants.

- Careful consideration should be given to soil pH prior to using Tackle WG. As the pH of soil increases the rate of product breakdown decreases. Tackle® WG is not recommended for use on soils with pH of 8.6 or higher as soil residual activity could adversely affect following crops and crop rotation options may be extended beyond normal intervals. Tackle WG is intended for use on soils with pH of 8.5 or lower.

- Crops other than wheat, barley, oats, triticale and cereal rye can be particularly sensitive to very low concentrations of Tackle WG in the soil. See crop rotation recommendations. Best weed control is obtained when rainfall or sprinkler irrigation wets the soil to a depth of 5 - 7.5 cm within 4 hours of application.

Crop rotation recommendations

- Soils previously treated with Tackle WG should not be rotated to crops other than those listed in the following tables.
- Crop tolerance (grown through to maturity) should be tested on small scale strips before sowing larger areas. Tackle WG treated soils may be sown to any of the crops listed but only after the intervals indicated have been observed.

THE FOLLOWING TABLE APPLIES TO ALL STATES

MINIMUM INTERVAL FOR RE-CROPPING (IN MONTHS FROM APPLICATION)						
Soil pH*	0	3	6	9	12	18
6.5 or less	Triticale, Wheat	Cereal rye	Oats	Barley	Subterranean clover**, Faba beans, Field peas, Linseed, Lucerne, Lupins, Medics**, Safflower, Canola and associated oilseed rape	Maize, Sorghum, Soybeans, Sunflower

THE FOLLOWING TABLES APPLY SPECIFICALLY TO QLD, SA, WA AND TAS ONLY:

MINIMUM INTERVAL FOR RE-CROPPING (IN MONTHS FROM APPLICATION)						
Rainfall Requirement	0	3	9	15	18	22
	Minimum of 700 mm					
Soil pH 6.6 - 7.5	Triticale, Wheat	Cereal rye	Barley, Oats	Millets (Japanese, Panicum and White French), Maize, Sorghum and Sunflower	Cotton, Soybeans	Faba beans, Field peas, Linseed, Subterranean clover**, Medics**, Canola, Safflower

MINIMUM INTERVAL FOR RE-CROPPING (IN MONTHS FROM APPLICATION)				
Rainfall Requirement	0	15	18	24 months or more
	Minimum of 700 mm			
Soil pH 7.6 - 8.5	Triticale, Wheat	Millets (Japanese, Panicum and White French), Maize, Sorghum and Sunflowers	Barley, Oats and Cereal rye	Rotate to crops other than cereals (such as listed above) only if field test strip of the planned rotational crop has been successfully grown through to maturity in the previous season.
8.6 and above	Tackle WG is not recommended for use on soils of pH 8.6 and above			

THE FOLLOWING TABLES REFER SPECIFICALLY TO NSW & VIC ONLY:

MINIMUM INTERVAL FOR RE-CROPPING (IN MONTHS FROM APPLICATION)					
	0	3	9	22	26
Soil pH 6.6 - 7.5	Triticale, Wheat	Cereal rye	Barley, Oats	Subterranean clover**, Faba beans, Field peas, Linseed, Lucerne, Lupins, Medics**, Canola, Safflower	Maize, Sorghum, Soybeans, Sunflower

MINIMUM INTERVAL FOR RE-CROPPING (IN MONTHS FROM APPLICATION)			
	0	18	24 months or more
7.6 – 8.5	Triticale, Wheat	Barley, Oats, Cereal rye	Rotate to crops other than cereals (such as listed above) only if field test strip of the planned rotational crop has been successfully grown through to maturity in the previous season.
8.6 and above	Tackle WG is not recommended for use on soils of pH 8.6 and above		

* The pH of a soil is determined by laboratory analysis using the 1:5, soil:water suspension method.

** The natural regeneration of subterranean clover and medics is included.

- Any soil previously treated with Tackle WG should not be rotated to crops other than those listed above in the tables.
- The tolerance of alternate crops (grown through to maturity) should be tested in strips before sowing on a large scale.

Clopyralid

Group I Herbicide

(Reference label: Lontrel® Advanced Herbicide APVMA Approval No: 65587/110938)

Protection of crops, native and other non-target plants

Composts and mulches – DO NOT apply Lontrel Advanced to crops or pastures that will be used for the production of compost or mulches or mushroom substrate. Such compost or mulch made from plant material treated with Lontrel may cause damage to susceptible crops and plants.

Susceptible crops and plants include, but are not limited to chickpeas, clover, cotton, faba beans, field peas, fruit trees, lentils, lupins, lucerne, medics, ornamentals, potatoes, safflower, tomatoes, vegetables, grape and kiwifruit vines, vetches, and wattles. **Field peas, faba beans, lentils and vetches are particularly susceptible and should not be sown the season following an application of Lontrel Advanced at 250 mL/ha.**

Where Lontrel Advanced residue carryover from use rates of less than 250 mL/ha is suspected and susceptible crops are to be planted, test the treated area as follows:

- *Field bioassay – where rain allows, plant a small area of the susceptible crop four to six weeks before desired planting date and take note of any symptoms of injury. If any herbicide symptoms are observed, only plant either canola or a cereal (see recommendation for northern and southern Australia below).*
- *Pot bioassay – where not practical to do field bioassay, plant a small number of seeds of the susceptible crop into pots containing soil from the treated field. Do this four to six weeks before desired planting date. If any herbicide symptoms are observed, only plant either canola or a cereal (see recommendation for northern and southern Australia below).*

Stubble from treated crops – ensure that harvesters effectively spread crop straw and DO NOT leave a heavy 'header trail' after harvest. Burn (if legal in the area), bale and remove, slash or incorporate stubble as soon as practical after harvest and as long as possible before planting next year to allow microbial breakdown of any residues in straw. Heavy stubble loads may carry more residues into the following season. **Where there is a heavy stubble burden and/or non-wetting soils, soils with low organic matter, grazing that causes surface sealing and reduced water penetration or Lontrel Advanced has been applied late in the previous season and less than the recommended rain amount have occurred from application to planting the susceptible crop (see below), only plant a winter or summer cereal or canola.**

Planting crops following use of Lontrel Advanced in previous crop – planting crops 'dry' without significant rain (see below) in the 'autumn break' increases the risk of injury to susceptible crops. This practice should be avoided, or only plant a winter or irrigated summer cereal crop or canola. **In severely dry conditions, where < 30% of average annual rainfall and/or less than the minimum rain (see below) has fallen between application and planting the next year, only plant a winter or summer cereal or canola.**

Plant-back periods for southern Australian winter dominant rainfall areas (Sth NSW, Vic, SA, WA)

Required rainfall – A minimum 25 mm rain event in the post-harvest summer to autumn period, with a subsequent extended period of at least two (2) weeks where the top 10 cm of the soil stays moist is required to enable breakdown of soil residues. Test this by use of a soil probe to see that soil has been thoroughly wet to 10 cm or more, for a period of at least two (2) weeks. Fastest residue breakdown will occur under good soil moisture and warm conditions, which promote microbial activity. Where significant rain (> 25 mm) has fallen in summer to autumn, with soil wetting for at least two (2) weeks, the following plant-back periods apply:

Following Crops	Rate (mL/ha) used previously	Plant-back Interval
Clover, Chickpea, Faba bean, Field pea, Lentils, Lupins, Medics and Vetch	Up to 150	9 months
	150-250	12 months
	>250	24 months

Plant-back periods for northern Australia summer dominant rainfall areas (Nth NSW, Qld)

Required rainfall before plant-back:

If planting susceptible summer crops – at least 100 mm rain or irrigation.

If planting susceptible winter crops – at least 150 mm rain or irrigation.

For all situations, sufficient rainfall or irrigation to enable soil wetting for at least one week is essential to enable residue breakdown before planting susceptible crops.

Where these requirements have been met the following plant-back periods apply:

Following Crops	Rate (mL/ha) and plant-back interval	
	Up to 40 mL/ha	> 40-150 mL/ha
Lucerne	9 months	9 months
Chickpea, Cotton Soybean, Sunflower	3 months	6 months
Maize, Sorghum	1 week	2 weeks

Note: Susceptible crops should not be sown for at least two (2) years where Lontrel Advanced at more than 150 mL/ha has been used in Northern Australia.

Cereals and canola may be safely planted immediately after application. However, post-emergent weed control may be reduced due to soil disturbance if one week is not allowed after application.

Cyanazine

Group C Herbicide

(Reference label: Bladex® 900 WG Herbicide APVMA Approval No: 57850/54945)

General instructions:

Bladex has relatively short persistence in the soil and as a consequence is unlikely to cause damage to susceptible crops following in the rotation.

Dicamba

Group I Herbicide

(Reference label: Kamba® 750 Selective Herbicide APVMA Approval No: 69302/115375)

Plant-back periods for conservation tillage

Wait for the following periods before planting the following crops into soils sprayed with the product. If applied to a dry soil, at least 15mm of rainfall is required before the plant-back period begins.

Note: if water-logging occurs shortly after sowing, the product may cause some reduction in crop vigour. Use as directed only in the States indicated.

NSW, VIC, SA, WA, TAS

Rate/ha	PLANT-BACK PERIOD (DAYS)				
	Wheat	Barley	Oats	Triticale	Rye
135mL	1	1	1	1	1
185mL	7	7	7	7	7
375mL	14	14	14	14	14

Rate/ha	PLANT-BACK PERIOD (DAYS)				
	Lupins	Clover/ Medics	Mung beans	Sunflower	Safflower
135mL	7	7	5	1	14
185mL	14	14	5	7	21
375mL	21	21	10	14	28

NSW, VIC, SA, WA, TAS

Rate/ha	PLANT-BACK PERIOD (DAYS)				
	Pigeon peas	Soybeans	Millet	Cotton	Sorghum
135mL	5	5	1	7	1
185mL	5	5	3	7	3
375mL	10	10	7	14	7

Rate/ha	PLANT-BACK PERIOD (DAYS)			
	Maize	Rapeseed	Field peas	Chickpeas
135mL	1	7	N.D.*	N.D.*
185mL	3	10	14	21
375mL	7	10	14	21

* Not determined

QLD, NT ONLY

Rate/ha	CROP	PLANT-BACK PERIOD
105-160mL	Wheat, Barley, Oats, Triticale, Commercial Rye, Sorghum, Maize, Millet, Sunflowers	1 day
	Soybeans, Mungbeans, Pigeon peas	5 days
	Cotton, Rapeseed	7 days

Note: For Qld, NT only: For all crops and rates above 160mL/ha – plant-back period 21 days.

Following Potato haulm destruction in Tas: For rates and crops not included above, a plant-back period of 6 weeks applies generally and 8 weeks for seed crops.

Diclofop-methyl

Group **A** Herbicide

(Reference label: Titan Diclofop-Methyl 500 EC Selective Herbicide APVMA Approval No: 66100/52726)

Protection of crop, native and other non-target plants

DO NOT plant susceptible crops (e.g. maize, sorghum, rice) for 10 weeks after application.

Diclofop-methyl + sethoxydim

Group **A** Herbicide

(Reference label: Decision® Selective Herbicide APVMA Approval No: 56166/105799)

Protection of crop, native and other non-target plants

DO NOT plant susceptible crops (e.g. maize, sorghum, rice) for 10 weeks after application.

Diclofop-methyl + sethoxydim + fenoxaprop-P-ethyl

Group **A** Herbicide

(Reference label: Cheetah® Gold Selective Herbicide APVMA Approval No: 60928/108563)

Protection of crop, native and other non-target plants

DO NOT plant susceptible crops (e.g. maize, sorghum, rice) for 10 weeks after application.

Diflufenican

Group **F** Herbicide

(Reference label: Brodal® Options Selective Herbicide APVMA Approval No: 53843/0905)

Subsequent crop tolerance:

To reduce effect on subsequent susceptible crops (e.g. canola), ensure thorough cultivation of soil prior to the sowing of these crops

Diflufenican + bromoxynil

Group **F + C** Herbicide

(Reference label: Jaguar® Selective Herbicide APVMA Approval No: 40383/118168)

Subsequent crops

To reduce effect on subsequent susceptible crops (e.g. canola), ensure thorough cultivation of soil prior to the sowing of these crops

Diflufenican + bromoxynil + MCPA

Group **F + C + I** Herbicide

(Reference label: Triathlon® Herbicide APVMA Approval No: 68602/58670)

Subsequent crops

To reduce effect on subsequent susceptible crops (e.g. canola), ensure thorough cultivation of soil prior to the sowing of these crops

Diflufenican + MCPA

Group **F + I** Herbicide

(Reference label: Tigrex® Selective Herbicide APVMA Approval No: 31525/58136)

Subsequent crops

To reduce effect on subsequent susceptible crops (e.g. canola), ensure thorough cultivation of soil prior to the sowing of these crops

Dimethenamid-P

Group **K** Herbicide

(Reference label: Outlook® Herbicide APVMA Approval No: 65695/102542)

Plant-back/re-cropping Intervals: DO NOT transplant brassicas, plant potatoes or sow crops other than field peas, lupins, chickpeas, green beans, kabocha, green peas, pumpkins, corn and sweet corn within 6 months of application of Outlook. **DO NOT** sow carrots or pyrethrum within 12 months of application of Outlook.

Diuron

Group C Herbicide

(Reference label: Diurex® WG Herbicide APVMA Approval No: 45772/63080)

Replanting restrictions

Crop Rotations: DO NOT replant treated areas to any crop within two years after last spray unless otherwise stated.

Cotton and Lucerne - DO NOT replant treated areas to any crop within 1 year after last spray. Except cotton, corn or grain sorghum which may be planted in the Spring of the following year.

Sugarcane - treated areas can be replanted to pineapple or sugarcane 1 year after last spray.

Fenoxaprop-P-ethyl

Group A Herbicide

(Reference label: Foxtrot® Selective Herbicide APVMA Approval No: 61410/0607)

Protection of crop, native and other non-target plants

DO NOT plant susceptible crops (e.g. corn, sorghum, oats or barley) for 3 weeks after application.

Fenoxaprop-P-ethyl + sethoxydim + diclofop-methyl

(See diclofop-methyl + sethoxydim + fenoxaprop-P-ethyl)

Florasulam + 2,4-D

Group B + I Herbicide

(Reference label: Vortex® Herbicide APVMA Approval No: 81288/102747)

Rotational crops

Susceptible winter crops may be sown the year following application. Susceptible crops include: chickpeas, faba beans, field peas, lentils and lupins or pastures with a lucerne, medic or clover component. Please contact your local ADAMA representative before planting a summer crop following use of Vortex Herbicide.

Florasulam + halauxifen

Group B + I Herbicide

(Reference label: Paradigm® Herbicide APVMA Approval No: 68248/109810)

Protection of crops, native and other non-target plants

Refer to CROP ROTATION RECOMMENDATIONS for minimum re-cropping periods. Crops susceptible to Paradigm include, but are not limited to, grain legumes (summer or winter), millets (*Echinochloa* spp.), lucerne, pasture legumes, cotton, fruit, hops, ornamentals, potatoes, safflower, beets, sunflower, tobacco, tomatoes, all vegetables and vines.

Crop rotation recommendations

Safe re-cropping periods apply for all crops following Paradigm application. Susceptible crops include, but are not limited to, those listed in the table below.

Crop to be sown	Application rate (g product/ha)	Minimum time from application to planting	Minimum rainfall requirement from application to planting
Barley, Triticale, Wheat	25	1 week	none
Oats	25	6 weeks	25 mm
Subterranean clover, Canola, Chickpeas, Faba bean, Field pea, Lentils, Lupins, Medic, Vetch	25	8 months	100 mm

Paradigm is primarily broken down in soil by microbial activity. Relatively quick breakdown will occur with extended periods of soil moisture when soil temperatures are warm. Breakdown may be slow in very dry seasons, or in cold, waterlogged soils, extending the plant-back interval to susceptible crops. Plant-back intervals may be extended when more than 50% of the required rainfall totals are intermittent, light rain, which does not maintain soil wetting for at least a week.

- Rotational crops may only be planted after both the time and rainfall requirement have been met.
- Plant-back periods for summer crops have not yet been established. Contact your Dow AgroSciences representative.

Fluazifop-P

Group A Herbicide

(Reference label: Fusilade Forte® 128 EC Herbicide APVMA Approval No: 58521/0806)

Protection of crop, native and other non-target plants

DO NOT plant cereal crops for a period of 12 weeks after application of Fusilade Forte.

Flumetsulam

Group B Herbicide

(Reference label: Broadstrike® Herbicide APVMA Approval No: 40714/101639)

Minimum re-cropping periods

Broadstrike is broken down in the soil by microbial activity. Warm, moist soil conditions favour highest microbial activity and quickest residue breakdown. For the re-cropping periods NNSW & Qld refers to summer dominant rainfall areas, where crops are grown on deep black earth soils (vertisols), with no impermeable sub-horizon in the top 30 cm. SNSW, Vic, Tas, SA and WA refers to winter dominant rainfall areas on soils with no impermeable sub-horizon in the top 30 cm. Also see the comments on **rainfall** and **soil type** below.

CROP	RATE (g/ha)	REGION	
		NNSW, Qld	SNSW, Vic, Tas, SA, WA
Cereal rye, Medics, Triticale, Wheat, Maize or Soybeans	25 or 50	May be planted at any time after Broadstrike application	May be planted at any time after Broadstrike application
Barley, Chickpeas, Clover, Field peas, Lucerne, Oats and Peanuts	25	3 months	3 months
	50	6 months	9 months
Sorghum or Sunflowers	25	6 months	-
	50	9 months	-
Cotton	25 or 50	24 months	-
Canola, Faba beans, Fenugreek, Lathyrus, Lentils, Lupins, Serradella or Popany vetch	25	6 months	9 months
	50	9 months	12 months

Rainfall – is required to maintain soil wetness for at least one week over the warm months to enable microbial degradation of herbicide residues to allow safe planting of sensitive crops. For SNSW, Victoria, Tasmania, SA and WA a minimum of 25 mm and preferably 50 mm or more rain must have fallen over the warm months of the year. For NNSW and Qld a minimum of 50 mm and preferably 100 mm rain or more must have fallen over the warm months of the year.

Soil type - on shallow, duplex, low organic matter soils with an impermeable sub-horizon within the root zone (30 cm deep or less) and alkaline surface soil, sensitive crops should NOT be planted until 2 years after application of Broadstrike at either 25 or 50 g/ha. (For crops grown in NNSW and Qld on soils other than vertisols, call Dow AgroSciences or your local reseller for more advice).

Where Broadstrike residue carryover is suspected and susceptible crops are to be planted, test the treated area as follows: Where rain allows, plant a small area of the susceptible crop 4 to 6 weeks before desired planting date and take note of any symptoms of injury. If any herbicide symptoms are observed, only plant a winter cereal.

Pot bioassay – Where not practical to do a field bioassay, plant a small number of seeds of the susceptible crop into pots containing soil from the treated area. Do this test 4 to 6 weeks before desired planting date. If any herbicide symptoms are observed, only plant a cereal crop.

Canola and cotton are highly sensitive to Broadstrike and therefore are a good test species for a bioassay.

Flumioxazin

Group G Herbicide

(Reference label: Valor® 500 WG Herbicide APVMA Approval No: 61622/108548)

Crop rotation recommendations

The minimum plant-back or preplant interval for canola after application of Valor at 30g/ha is 5 months.

The following plant-back or re-cropping intervals apply to crops that may be grown during the winter period on rotation with the summer crops, where 210-280g of Valor has been applied.

Crop	Minimum plant-back or re-cropping interval
Wheat	2 months
Durum wheat	3 months
Barley	3 months
Triticale	3 months
Oats	3 months
Lupins	3 months
Faba beans	none required
Field peas	1 month
Lentils	4 months
Chickpeas	1 month
Canola	9 months
Lucerne	6 months

For advice on crops not listed contact the manufacturer Sumitomo Chemical Australia.

Flumioxazin

Group G Herbicide

(Reference label: Terrain® 500 WG Herbicide APVMA Approval No: 69830/118337)

Crop rotation recommendations

The following rotational crops may be planted after applying Terrain 500 WG at the registered label rates. Planting earlier than the recommended plant-back or re-cropping interval may result in crop injury. For crops not specified below, plant-back or re-cropping intervals are unknown. Contact Nufarm Australia Limited for guidance prior to sowing.

MINIMUM PLANT-BACK OR RE-CROPPING INTERVAL (MONTHS)				
25mm of irrigation or rain is necessary, in addition to the plant-back period, after application and before planting the following winter crop species (except faba beans) to improve crop safety.				
Crop species – Winter crops	Terrain 500WG rate (g/ha)			
	30	120	180	280
Barley, Lupins, Oats, Triticale	0	1	2	3
Canola	5	9	9	9
Chickpeas, Field pea	0	0	0	1
Lentils	0	2	3	4
Lucerne (Seedling), Medic, Subterranean clover	0	3	4	6
Wheat	0	0	1	2
Durum wheat	0	1	1	3
Vetch	0	1	1	2
Faba beans	0	0	0	0

The following plant-back or re-cropping intervals apply to crops that may be grown during the winter period on rotation with the summer crops, where up to 280g of Terrain 500WG have been applied.

MINIMUM PLANT-BACK OR RE-CROPPING INTERVAL (MONTHS)	
15mm of irrigation or rain is necessary, in addition to the plant-back period, after application and before planting the following summer crops (except peanut, soybean, pigeon pea) to improve crop safety.	
Crop species – Summer crops	Terrain 500WG rate (g/ha) up to 280
Cotton, Maize, Sorghum, Navy beans	1
Sunflower, Mungbean	2
Peanut, Soybean, Pigeon pea	None required

Fluometuron + prometryn

Group C Herbicide

(Reference label: Cotogard® WG Herbicide APVMA Approval No: 59453/63145)

Protection of crop, native and other non-target plants

Crops other than cotton should not be planted within six months of applying Cotogard WG Herbicide.

Fluroxypyr

Group I Herbicide

(Reference label: Starane® Advanced Herbicide APVMA Approval No: 62287/103387)

Minimum re-cropping periods

Plant-back periods for crops following the application of Starane Advanced for rates up to 900 mL/ha.			
RATE mL/ha	225	450	900
CROP	Days		
Barley	7	7	7
Wheat	7	7	7
Chickpea	7	7	7
Cotton	14	14	28
Soybean	7	7	14
Sunflower	7	7	7
Maize	7	7	7
Sorghum	7	7	7

Restraint: DO NOT plant susceptible crops, including cotton, pigeon peas and other pulse crops, into irrigated fields with soils containing less than 25% clay content, within 12 months of treatment with Starane Advanced.

Note: Before using Starane Advanced in tank mixes with other herbicides, check the plant-back information on all product labels. The time between spraying and planting will be determined by the most residual product, i.e. the product with the longest plant-back period.

Fluroxypyr + aminopyralid

(See aminopyralid + fluroxypyr)

Fluroxypyr + halauxifen

Group I Herbicide

(Reference label: Pixxaro® Herbicide APVMA Approval No: 82839/106886)

Minimum re-cropping periods

Halauxifen-methyl remains active in the soil for extended periods depending on rate of application, soil type, rainfall, temperature, humidity, soil moisture and soil organic matter. The following table shows plant-back periods to particular crops following application of Pixxaro.

Northern New South Wales and Queensland

Plant-back periods for rotation crops following application of Pixxaro for rates up to 600 mL/ha on black cracking clay soils. These plant-back periods are based on normal rainfall pattern. During drought conditions (or when rainfall is less than 100 mm for a period of four (4) months or greater) the plant-back period may be significantly longer.

Winter crop	Plant-back period (months)	Summer crop	Plant-back period (months)
Wheat	1	Sorghum	1
Barley	1	Mungbean	6
Canola	1	Sunflower	6
Chickpea	7	Soybean	6
Faba bean	7	Cotton	12
Lucerne	7	Maize	1

Southern New South Wales, Victoria, South Australia and Western Australia

Plant-back periods for rotation crops following application of Pixxaro for rates up to 400 mL/ha.

Crops	Plant-back Period (months)
Barley, Canola, Oats, Triticale, Wheat	1
Chickpea, Faba bean, Field pea, Lentils, Medic, Subterranean clover, Vetch	7

Protection of crops, native and other non-target plants:

Crops susceptible to Pixxaro include, but are not limited to: peas, lupins, lucerne, navy beans, peanuts, soybeans and other legumes, cotton, flowers, fruit, hops, ornamentals, shade trees and *Pinus* spp., potatoes, safflower, sugar beet, sunflowers, tobacco, tomatoes, vegetables and vines. Pixxaro is damaging to susceptible crops during both growing and dormant periods. Grasses are normally unaffected and establish quickly after treatment. Halauxifen-methyl can remain active in the soil for extended periods depending on soil type and application rate, rainfall, temperature, humidity, soil moisture and soil organic matter.

Halauxifen + florasulam

(See florasulam + halauxifen)

Halauxifen + fluroxypyr

(See fluroxypyr + halauxifen)

Halauxifen + pyroxsulam

(See pyroxsulam + halauxifen)

Haloxyfop-R-methyl

Group A Herbicide

(Reference label: Verdict® 520 Herbicide APVMA Approval No: 50643/0714)

Protection of crop, native and other non-target plants

Cereal crops or grasses planted within 12 weeks of application may be damaged by the residual effects of Verdict 520 Herbicide, particularly on light and red soils.

Imazamox

Group B Herbicide

(Reference label: Raptor® WG Herbicide APVMA Approval No: 50854/56996)

Follow crops:

Under conditions, such as very dry seasons, which do not favour breakdown of this product, carry-over soil residues can affect susceptible follow crops. As environmental and agronomic factors make it impossible to eliminate all risks associated with this product, rotational crop injury is always possible. The following minimum re-cropping intervals (months after application) should be observed.

Following use in lucerne, legume-based pastures and field peas:

MONTHS AFTER APPLICATION		
0	10	21
Field peas, Canola varieties with CLEARFIELD® technology, Maize varieties with CLEARFIELD technology, Wheat varieties with CLEARFIELD technology,	Chickpeas, Faba beans, Lucerne, Lupins, Pasture legumes, Vetch, *Barley, *Wheat (except varieties with CLEARFIELD technology), *Triticale	All other crops including Canola (except varieties with CLEARFIELD technology), Oats, Safflower

* The following additional requirements apply if it is intended to sow wheat, barley or triticale during the next winter season:

DO NOT apply Raptor later than the end of August.

DO NOT use Raptor in areas where rainfall from the time of spraying to sowing of cereals is expected to be below 200 mm.

Furthermore:

DO NOT use on soils of pH 5.5 (CaCl₂) or less in areas where rainfall from spraying to sowing of cereals is expected to be below 300 mm.

In late, short seasons where the soil is cold and for most of the time it is wet, break-down will be slower and plant-back times will be extended.

If expected rainfall is not received following use of Raptor, consult your local BASF representative before planting wheat, barley or triticale. (In calculating rainfall actually received, exclude single, isolated falls which do not result in periods of continuous soil moisture to allow microbial breakdown to occur in the root zone).

Following use in summer crops:

Irrigated only

MONTHS AFTER APPLICATION			
0	5	10	18
Mungbeans, Peanuts, Soybeans, Canola varieties with CLEARFIELD technology, Maize varieties with CLEARFIELD technology, Wheat varieties with CLEARFIELD technology	*Chickpeas, *Lucerne, *Lupins, *Pasture legumes, *Barley, *Wheat (except varieties with CLEARFIELD technology)	**Maize (except varieties with CLEARFIELD technology), **Sorghum, **Cotton, **Oats, **Sunflower	All other crops (providing rainfall and irrigation exceeds 2000 mm)

* **DO NOT** plant these crops unless interim rainfall (rainfall plus irrigation) from application to sowing is at least 500 mm.

** **DO NOT** plant these crops unless interim moisture (rainfall plus irrigation) from application to sowing is at least 800 mm.

Dryland only

MONTHS AFTER APPLICATION				
0	8	10	15	22
Mungbeans, Peanuts, Soybeans, Canola varieties with CLEARFIELD technology, Maize varieties with CLEARFIELD technology, Wheat varieties with CLEARFIELD technology	*Lucerne, *Barley, *Wheat (except varieties with CLEARFIELD technology)	**Chickpeas, **Maize (except varieties with CLEARFIELD technology), **Sorghum, **Cotton, **Oats, **Sunflower	Pasture legumes, Lupins	All other crops (providing rainfall exceeds 2000 mm)

* **DO NOT** plant these crops unless interim rainfall from application to sowing is at least 500 mm.

** **DO NOT** plant these crops unless interim rainfall from application to sowing is at least 800 mm.

Imazamox + imazapyr

Group B Herbicide

(Reference label: Intervix® Herbicide APVMA Approval No: 59735/105298)

Following crops

This product is broken down in the soil by microbes in wet, aerobic conditions. Under conditions that do not favour breakdown, carry-over soil residues can affect susceptible follow crops. Normally safe residue levels may still affect follow crops when soil nutrition is low or marginal, when cold and very wet soil conditions prevail, or when soil pathogens or nematodes are present. As environmental and agronomic factors make it impossible to eliminate all risks associated with this product, rotational crop injury is always possible.

Note: when the intention is to grow cereals on CLEARFIELD canola stubble (treated with Intervix) self-sown canola volunteers must be removed before they mature beyond 2-leaf, all macro and micro-nutrients must be maintained at levels necessary to grow the planned crops, and sulfonyleureas must not be used.

The following minimum re-cropping intervals (months after application) should be observed.

MONTHS AFTER APPLICATION			
0	8	22	34
CLEARFIELD Plus Wheat, CLEARFIELD Wheat, CLEARFIELD Barley, CLEARFIELD Canola, INZEN® Sorghum	Chickpeas, Faba beans, Field peas, Lucerne, Lupins, Pasture legumes, Mungbeans, Soybeans, Peanuts, *Barley, *Oats, *Wheat, *Triticale, **Maize, **Sorghum (except varieties with INZEN Technology)	Cotton	All other crops

* **Non-CLEARFIELD Barley, Oats, Triticale, Non-CLEARFIELD Wheat:**

The following additional requirements apply if it is intended to sow these cereals during the next winter season:

- **DO NOT** apply Intervix later than the end of August in winter crops (no later than the end of July in WA).
- **DO NOT** use Intervix in areas where rainfall from spraying to sowing of cereals is expected to be below 150 mm (for 300 – 375 mL/ha use), 200 mm (for up to 500 mL/ha use) and 250 mm (for 600 – 750 mL/ha use).
- **DO NOT** use above 375 mL/ha in the Lower Great Southern region of Western Australia.

** **DO NOT** plant these crops unless interim moisture (rainfall plus irrigation) from application to sowing is at least 800 mm.

For all situations, if expected rainfall is not received following use of Intervix, consult your local BASF representative before planting non-CLEARFIELD cereals. In calculating rainfall actually received, place greater emphasis on rain received from application up to the end of Spring and lesser emphasis on break rains. If single isolated heavy summer and autumn falls and break rains are required to achieve rainfall targets, it may not be safe to sow non-CLEARFIELD cereals within 10 months of application. Consult your local BASF representative for advice.

Imazapic

Group B Herbicide

(Reference label: Flame® Herbicide APVMA Approval No: 48034/0703)

Follow crops:

Under conditions which do not favour breakdown of this product, carry-over soil residues can affect susceptible follow crops. As environmental and agronomic factors make it impossible to eliminate all risks associated with this product, rotational crop injury is always possible. The following minimum re-cropping intervals (months after application) should be observed.

Following use in summer fallow:

MONTHS AFTER APPLICATION				
3	4	10	24	36
Faba beans, Peanuts, Mungbeans, Maize varieties with CLEARFIELD technology ONLY : - Pacific Hycorn 62IT, - Pacific Hycorn 53IT, - Pioneer 3395IR; Wheat varieties with CLEARFIELD technology ONLY .	Wheat* (except for Wheat varieties with CLEARFIELD technology ONLY), Barley*, Lucerne*, Chickpea	Sorghum†, Maize† (except for Maize varieties with CLEARFIELD technology ONLY), dryland Cotton▲	Irrigated Cotton, Sunflower	Any other crops

* The following additional requirements apply if it is intended to plant wheat (except for varieties with CLEARFIELD technology), barley or lucerne during the next winter season.

- **DO NOT** apply Flame in fallow later than the end of December.
- **DO NOT** apply Flame in areas where rainfall from spraying to sowing of cereals is expected to be below 200 mm.

† The following additional requirements apply if it is intended to plant sorghum or maize (except for varieties with CLEARFIELD technology) during the next summer season.

- **DO NOT** apply Flame in areas where rainfall from spraying to sowing of sorghum or maize is expected to be below 500 mm.
- ▲ The following additional requirements apply if it is intended to plant dryland cotton during the next summer season.
- **DO NOT** apply Flame in areas where rainfall from spraying to sowing of dryland cotton is expected to be below 550 mm.

Following use in sugarcane and peanuts:

MONTHS AFTER APPLICATION			
0	4	5	10
Mungbeans, Peanuts, Soybeans, Maize varieties with CLEARFIELD technology ONLY : - Pacific Hycorn 62IT, - Pacific Hycorn 53IT, - Pioneer 3395IR	Chickpeas, Lucerne*, Barley*, Wheat* (except for wheat varieties with CLEARFIELD technology ONLY)	Lupins, Pasture legumes	Maize* (except varieties with CLEARFIELD technology ONLY), dryland Cotton▲

MONTHS AFTER APPLICATION		
18	24	36
Sorghum†	Irrigated Cotton, Sunflower	Any other crops

* The following additional requirements apply if it is intended to plant wheat (except for varieties with CLEARFIELD technology), barley or lucerne during the next winter season.

- **DO NOT** apply Flame in areas where rainfall from spraying to sowing of cereals is expected to be below 200 mm.
- † The following additional requirements apply if it is intended to plant sorghum or maize (except for varieties with CLEARFIELD technology), during the next summer season.
- **DO NOT** apply Flame in areas where rainfall from spraying to sowing of sorghum or maize is expected to be below 500 mm.
- ▲ The following additional requirements apply if it is intended to plant dryland cotton during the next summer season.
- **DO NOT** apply Flame in areas where rainfall from spraying to sowing of dryland cotton is expected to be below 550 mm.

Imazapic + imazapyr

Group B Herbicide

(Reference label: OnDuty® Herbicide APVMA Approval No: 51612/58057)

Follow crops

This product is broken down in the soil by microbes in wet, aerobic conditions. Under conditions which do not favour breakdown, carry-over soil residues can affect susceptible follow crops. Normally safe residue levels may still affect follow crops when soil nutrition is low or marginal, when cold and very wet soil conditions prevail, or when soil pathogens or nematodes are present. As environmental and agronomic factors make it impossible to eliminate all risks associated with this product, rotational crop injury is always possible.

Note: when the intention is to grow cereals on CLEARFIELD canola stubble (treated with OnDuty) self-sown canola volunteers must be removed at least eight weeks prior to sowing, all macro and micro-nutrients must be maintained at levels necessary to grow the planned crops, and sulfonyleurea herbicides must not be used.

The following minimum re-cropping intervals (months after application) should be observed.

MONTHS AFTER APPLICATION - 20g/ha Rate (ALL STATES)			
0	8	22	34
Chickpeas, Faba beans, Field peas, Canola varieties with CLEARFIELD technology, Wheat varieties with the CLEARFIELD technology	Lucerne, Lupins, Pasture legumes, Vetch, *Oats, *Triticale, *Barley, *Wheat (except varieties with the CLEARFIELD technology)	Safflower	All other crops including Canola

* The following additional requirements apply if it is intended to sow wheat (except varieties with the CLEARFIELD technology), barley, oats or triticale during the next winter season:

- **DO NOT** apply OnDuty later than the end of August (no later than the end of July in WA).
- **DO NOT** use OnDuty in areas where rainfall from spraying to sowing of cereals (except varieties with the CLEARFIELD technology) is expected to be below 150 mm.

MONTHS AFTER APPLICATION - 40 g/ha Rate (ALL STATES EXCEPT WA)			
0	8	22	34
Chickpeas, Faba beans, Field peas, Canola varieties with CLEARFIELD technology, Wheat varieties with CLEARFIELD technology	Lucerne, Lupins, Pasture legumes, Vetch, *Oats, *Triticale, *Barley, *Wheat (except varieties with CLEARFIELD technology)	Safflower	All other crops including all other Canola

* The following additional requirements apply if it is intended to sow wheat (except varieties with the CLEARFIELD technology), barley, oats or triticale during the next winter season:

- **DO NOT** apply OnDuty later than the end of August.
- **DO NOT** use OnDuty in areas where rainfall from spraying to sowing of cereals (except wheat varieties with CLEARFIELD technology) is expected to be below 250 mm.

MONTHS AFTER APPLICATION - 40 g/ha Rate (WA ONLY)			
0	8	22	34
Chickpeas, Faba beans, Field peas, Canola varieties with CLEARFIELD technology, Wheat varieties with CLEARFIELD technology	Lucerne, Lupins, Pasture legumes, Vetch, Wheat varieties with CLEARFIELD technology only	Safflower, *Oats, *Triticale, *Barley, *Wheat	All other crops including all other Canola

* The following additional requirements apply if it is intended to sow wheat (except varieties with the CLEARFIELD technology), barley, oats or triticale during the next winter season:

- **DO NOT** apply OnDuty later than the end of July. DO NOT use OnDuty in areas where rainfall from spraying to sowing of cereals (except wheat varieties with CLEARFIELD technology) is expected to be below 250 mm in the first 10 months after spraying.

MONTHS AFTER APPLICATION - 55 g/ha Rate (ALL STATES EXCEPT WA)			
0	8	22	34
Canola varieties with CLEARFIELD technology, Wheat varieties with CLEARFIELD technology	Chickpeas, Faba beans, Field peas, *Triticale, *Barley, *Wheat	Lucerne, Lupins, Oats, Pasture legumes, Vetch	All other crops including all other Canola

* The following additional requirements apply if it is intended to sow wheat (except varieties with the CLEARFIELD technology), barley, oats or triticale during the next winter season:

- **DO NOT** apply OnDuty later than the end of July.
- **DO NOT** use OnDuty in areas where rainfall from spraying to sowing of cereals (except wheat varieties with CLEARFIELD technology) is expected to be below 350 mm.

MONTHS AFTER APPLICATION - 55 g/ha Rate (WA ONLY)			
0	8	22	34
Canola varieties with CLEARFIELD technology, Wheat varieties with CLEARFIELD technology	Chickpeas, Faba beans, Field peas	Lucerne, Lupins, Pasture legumes, Vetch, Oats, Triticale, Barley, Wheat	All other crops including all other Canola

If expected rainfall is not received following use of OnDuty, consult your local BASF representative before planting wheat, barley or triticale. (In calculating rainfall actually received, exclude single isolated falls which do not result in periods of continuous soil moisture to allow microbial breakdown to occur in the root zone).

Imazapic + imazapyr + MCPA

Group B + I Herbicide

(Reference label: Midas® Herbicide APVMA Approval No: 52714/57963)

Follow crops

This product, like all other imidazolinone herbicides, is broken down in the soil by microbes in wet, aerobic conditions. Under conditions that do not favour breakdown, such as impoverished soils low in organic matter, non-wetting sands, anaerobic situations such as waterlogging, and prolonged dry periods, soil residues will persist longer and may affect susceptible follow crops.

Otherwise normally safe residue levels may still affect follow crops growing under stressful conditions such as when soil nutrition is low or marginal, or when drought conditions or cold and very wet soil conditions prevail, or when soil pathogens or nematodes are present as these situations will add stress to the crops.

As environmental and agronomic factors make it impossible to eliminate all risks associated with this product, rotational crop injury is always possible. The following minimum re-cropping intervals (months after application) should be observed.

MONTHS AFTER APPLICATION			
0	8	22	34
Canola varieties with CLEARFIELD technology, Chickpeas, Faba beans, Field peas, Wheat varieties with CLEARFIELD technology	Chickpeas, Faba beans, Field peas, Lucerne, Lupins, Oats, Pasture legumes, Vetch, *Triticale, *Barley, *Wheat (except for varieties with CLEARFIELD technology)	Safflower	All other crops including Canola

* The following additional requirements apply if it is intended to sow wheat (except varieties with the CLEARFIELD technology), barley, oats or triticale during the next winter season:

- **DO NOT** apply Midas later than the end of August.
- **DO NOT** use Midas in areas where rainfall from spraying to sowing of cereals (except wheat varieties with CLEARFIELD technology) is expected to be below 250 mm.

If expected rainfall is not received following use of Midas, consult your local BASF representative before planting wheat (except wheat varieties with CLEARFIELD technology), barley or triticale. (In calculating rainfall actually received, exclude single isolated heavy summer and autumn falls above 100 mm).

Imazapyr + imazamox

(See imazamox + imazapyr)

Imazapyr + imazapic

(See imazapic + imazapyr)

Imazapyr + imazapic + MCPA

(See imazapic + imazapyr + MCPA)

Imazapyr + imazethapyr

(See imazethapyr + imazapyr)

Imazethapyr

Group B Herbicide

(Reference label: Spinnaker® 700 WDG Herbicide APVMA Approval No: 49625/57716)

Follow Crops

Under conditions which do not favour breakdown of this product, carry-over soil residues can affect susceptible follow crops. As environmental and agronomic factors make it impossible to eliminate all risks associated with the use of this product, rotational crop injury is always possible.

The following minimum re-cropping intervals (months after application) should be observed.

Following use in winter crops:

MONTHS AFTER APPLICATION			
0	8	22	34
Maize varieties with CLEARFIELD technology ONLY : - Pacific Hycorn 62IT, - Pacific Hycorn 53IT, - Pioneer 3395IR, Wheat varieties with CLEARFIELD technology ONLY , Canola varieties with CLEARFIELD technology ONLY , Faba beans, Field peas, Chickpeas	Lucerne, Lupins, Pasture legumes, Vetch, *Triticale, *Barley, *Wheat (except varieties with CLEARFIELD technology; see 0 months)	Oats, Safflower	All other crops including Canola (except varieties with CLEARFIELD technology; see 0 months)

* The following additional requirements apply if it is intended to sow wheat (except varieties with CLEARFIELD technology), barley or triticale during the next winter season.

- **DO NOT** apply Spinnaker pre-emergence later than the end of June and post-emergence later than the end of July.
- **DO NOT** use Spinnaker in areas where rainfall from spraying to sowing of cereals is expected to be below 300 mm.

Furthermore:

- In SA and WA **DO NOT** use on soils of pH 5.5 (Ca Cl₂) or less in areas where rainfall from spraying to sowing of cereals is expected to be below 400 mm.
- In NSW, Vic and SA **DO NOT** use the 100 g/ha rate in areas where rainfall from spraying to sowing of cereals is expected to be below 400 mm.

If expected rainfall is not received following use of Spinnaker, consult your local BASF representative before planting wheat, barley or triticale. (In calculating rainfall actually received, exclude single isolated heavy summer and autumn falls above 100 mm).

Following use in summer crops:

MONTHS AFTER APPLICATION			
0	5	10	18
Maize varieties with CLEARFIELD technology ONLY : - Pacific Hycorn 62IT, - Pacific Hycorn 53IT, - Pioneer 3395IR, Mungbeans, Peanuts, Soybeans	Chickpeas, Lucerne, Lupins, Pasture legumes, *Barley, *Wheat (except for wheat varieties with CLEARFIELD technology), Canola varieties with CLEARFIELD technology ONLY	** Maize (except for varieties with CLEARFIELD technology, see 0 months), ** Sorghum	All other crops (providing rainfall and irrigation exceeds 2000 mm)

* **DO NOT** plant these crops unless interim moisture (rainfall plus irrigation) from application to sowing is at least 500 mm.

****DO NOT** plant these crops unless interim moisture (rainfall plus irrigation) from application to sowing is at least 800 mm. **DO NOT** plant sorghum if Spinnaker rates higher than 100 g/ha were used in the previous crop.

Dryland only

DO NOT use the 140 gm rate in dryland soybeans, mungbeans or peanuts unless it is intended to re-crop with a leguminous crop or crop varieties with CLEARFIELD technology.

MONTHS AFTER APPLICATION				
0	10	15	22	27
Maize varieties with CLEARFIELD technology ONLY : - Pacific Hycorn 62IT, - Pacific Hycorn 53IT, - Pioneer 3395IR, Mungbeans, Peanuts, Soybeans	** Maize (except varieties with CLEARFIELD technology), ** Sorghum	Chickpeas, Lucerne, Lupins, Pasture legumes, *Barley, *Wheat (except for wheat varieties with CLEARFIELD technology), Canola varieties with CLEARFIELD technology ONLY	Cotton, Maize (see also 0 months), Sorghum, Sunflower	All other crops (providing rainfall exceeds 2000 mm)

* **DO NOT** plant these crops unless interim rainfall from application to sowing is at least 500 mm.

****DO NOT** plant these crops unless interim rainfall from application to sowing is at least 800 mm.

DO NOT plant sorghum if Spinnaker rates higher than 100 g/ha were used in the previous crop.

Imazethapyr + imazapyr

Group B Herbicide

(Reference label: Lightning® Herbicide APVMA Approval No: 52742/114328)

Follow crops

Under conditions which do not favour breakdown of this product, carry-over soil residues can affect susceptible follow crops. As environmental and agronomic factors make it impossible to eliminate all risks associated with this product, rotational crop injury is always possible. The following minimum re-cropping intervals (months after application) should be observed.

Irrigated only

MONTHS AFTER APPLICATION			
0	5	10	18
Maize varieties with CLEARFIELD technology ONLY , Canola varieties with CLEARFIELD technology ONLY , Mungbeans, Peanuts, Soybeans, Wheat varieties with CLEARFIELD technology ONLY	Chickpeas, Lucerne, Lupins, Pasture legumes, *Barley, *Wheat, (except for varieties with CLEARFIELD technology; see 0 months)	**Maize (except for varieties with CLEARFIELD technology; see 0 months), **Sorghum	All other crops (providing rainfall and irrigation exceeds 2000mm)

* **DO NOT** plant these crops unless interim moisture (rainfall plus irrigation) from application to sowing is at least 500mm.

****DO NOT** plant these crops unless interim moisture (rainfall plus irrigation) from application to sowing is at least 800mm.

Dryland only

MONTHS AFTER APPLICATION				
0	10	15	22	27
Maize varieties with CLEARFIELD technology ONLY , Canola varieties with CLEARFIELD technology ONLY , Mungbeans, Peanuts, Soybeans, Wheat varieties with CLEARFIELD technology ONLY	**Maize (except for varieties with CLEARFIELD technology; see 0 months), **Sorghum	Chickpeas, Lucerne, Lupins, Pasture Legumes, *Barley, *Wheat	Cotton, Maize (except for varieties with CLEARFIELD technology; see 0 months), Sorghum, Sunflower	All other crops (providing rainfall exceeds 2000mm)

* **DO NOT** plant these crops unless interim rainfall from application to sowing is at least 500mm.

****DO NOT** plant these crops unless interim rainfall from application to sowing is at least 800mm.

Iodosulfuron-methyl-sodium

Group B Herbicide

(Reference label: Hussar® OD Selective Herbicide APVMA Approval No: 61992/108228)

Crop rotation recommendations

Minimum re-cropping intervals apply for all crops following Hussar OD application.

The application of a Group B herbicide in the crop following Hussar OD use may result in increased crop effects. Consult the manufacturer of Hussar OD for advice in these situations.

Rainfall of less than **250 mm** following Hussar OD use may result in extended re-cropping intervals for **winter crops sown the following season**. Patchy rain, with extended dry periods may also result in extended re-cropping intervals, even when rainfall exceeds 250 mm. If in doubt, seek specialist advice.

Rainfall of less than **500 mm** following Hussar OD use may result in extended re-cropping intervals for **summer crops sown the following year**.

Use on soils with a pH greater than 8.5 (soil in water) has not been extensively tested and is not recommended.

For advice on crops not listed below, contact the manufacturer, Bayer CropScience Pty Ltd.

CROP: Winter crops	MINIMUM RE-CROPPING INTERVAL
Wheat	1 day
Barley, Canola, Chickpeas, Faba beans, Lupins, Oats, Peas, Triticale, Vetch	9 months
Lucerne, Clover and Subterranean clover	9 months NOTE/COMMENTS: in higher pH soils and at lower limit rainfall some discolouration may occur.
Lentils, Medic	21 months
CROP: Summer crops	MINIMUM RE-CROPPING INTERVAL
Cotton, Mungbeans, Sorghum, Soybeans, Sunflower	12 months

Isoxaben

Group O Herbicide

(Reference label: Gallery® 750 Dry Flowable Herbicide APVMA Approval No: 47333/106011)

Protection of crops, native and other non-target plants

Cereals – Spraydrift or runoff containing Gallery 750 Dry Flowable Herbicide may result in reduced germination or emergence of non-target plants adjacent to treated areas. **DO NOT** apply under weather conditions or from spraying equipment that may cause spray to drift onto nearby susceptible plants/crops, cropping lands, pastures or waterbodies.

DO NOT plant a broadleaf crop into areas where Gallery 750 Dry Flowable Herbicide has been used until AFTER the following winter season. As individual crop sensitivity to soil residues may vary, you must check with your field advisor, or Dow AgroSciences representative, before planting any crop following application of this product.

All broadleaf crops are susceptible to carryover residues from Gallery 750 Dry Flowable Herbicide. Crops such as but not limited to brassicas (including canola), chickpeas, faba beans, field peas and other grain legumes are particularly at risk. Check with your Dow AgroSciences representative or field advisor before planting any susceptible crop in the seasons following use of Gallery 750 Dry Flowable Herbicide.

Where Gallery 750 Dry Flowable Herbicide residue carryover is suspected and susceptible crops are to be planted, test the treated area as follows:

Field bioassay – where rain allows, plant a small area of the susceptible crop four to six weeks before desired planting date and take note of any symptoms of injury. If any herbicide symptoms are observed, **DO NOT** plant any broadleaf crop that season.

Pot bioassay – where not practical to do field bioassay, plant a small number of seeds of the susceptible crop into pots containing soil from the treated field. Do this test four to six weeks before desired planting date. If any herbicide symptoms are observed, **DO NOT** plant any broadleaf crop that season.

Planting crops following use of Gallery 750 Dry Flowable Herbicide in previous cereal crop

Planting crops dry without appropriate rain (see below) in the fallow prior to planting increases the risk of injury to susceptible crops. This practice should be avoided or only plant a cereal crop. In severely dry conditions, where less than 30% of average annual rainfall and/or less than the minimum rain has fallen between application and planting the next year (see below), only plant a cereal crop.

Plant-back periods – Vic, SA, WA, SNSW (winter dominant rain)

RATE	RAINFALL	CROP	PLANT-BACK PERIOD
70-140g		Barley, Oats, Triticale, Wheat	2 weeks
	More than 100mm over spring-summer and more than 300mm total from application to planting next crop.	Lupins	9 months
	More than 100mm over spring-summer and more than 300mm total, in each of the first and second seasons prior to planting next crop.	Canola	22 months

Other crops (rates applied > 140 g/ha) - A minimum of 2 years should elapse before planting all broadleaf crops, and 3 years before planting sensitive crops such as brassicas, peas, beans, onions and poppies. Grasses are normally unaffected and establish quickly after treatment. Individual crop sensitivity to soil residues should be checked with your field advisor, or Dow AgroSciences representative, before planting any crop following application of this product. Spraydrift or runoff containing Gallery 750 Dry Flowable Herbicide may result in reduced germination or emergence of non-target plants adjacent to treated areas.

Isoxaflutole

Group H Herbicide

(Reference label: Balance® 750 WG Herbicide APVMA Approval No: 49456/108270).

Crop rotation recommendations

Balance 750 WG may be applied to chickpea crops where the following crop will be chickpeas, or where the land will be left fallow. The following re-cropping instructions apply to following crops other than chickpeas.

- Prolonged dry periods or cold conditions may result in extended re-cropping intervals, even if rainfall exceeds the required amount (listed in the table below). If in doubt, contact your local Bayer CropScience representative.
- Heavy rainfall after an extended dry period may result in the reactivation of Balance 750 WG. This can lead to transient bleaching or crop stunting.
- Use on soils with a pH less than 7.0 has not been extensively tested, and may result in extended re-cropping intervals.
- Cultivation is recommended prior to re-cropping.
- Minimum re-cropping intervals apply for all crops following Balance application. For advice on crops not listed below, contact the manufacturer, Bayer CropScience Pty Ltd.

CROP	MINIMUM RE-CROPPING INTERVAL	MINIMUM RAINFALL REQUIREMENT*
Wheat	10 weeks**	100 mm
Barley	10 weeks**	100 mm
Oats	10 weeks**	100 mm
Canola	9 months	350 mm
Faba beans	9 months	250 mm
Field peas	9 months	250 mm
Vetch	9 months	250 mm
Lentils	21 months	500 mm
Clover	21 months	500 mm
Lucerne	9 months	350 mm
Medic	21 months	500 mm
Maize	10 weeks**	100 mm
Mungbeans	7 months	250 mm
Sorghum	7 months	250 mm
Soybeans	7 months	250 mm
Sunflowers	7 months	250 mm
Cotton	7 months	350 mm

* Minimum rainfall total from Balance use until planting of the subsequent crop. **DO NOT include flood or furrow irrigation in the minimum rainfall requirement.**

**If Balance has been tank-mixed with simazine, observe the re-cropping interval for simazine for wheat, barley, oats and maize.

Isoxaflutole + terbuthylazine

Group H + C Herbicide

(Reference label: Palmero® TX Herbicide APVMA Approval No: 81927/104441)

Crop rotation recommendations

Palmero TX may be applied to chickpea crops or fallow where the following crop will be chickpeas. The following re-cropping instructions apply to following crops grown after chickpeas.

- Prolonged dry periods or cold conditions may result in extended re-cropping intervals, even if rainfall exceeds the required amount (listed in the table below). If in doubt, contact your local Adama representative.
- Heavy rainfall after an extended dry period may result in the reactivation of Palmero TX. This can lead to transient bleaching or crop stunting.
- Use on soils with a pH less than 7.0 has not been extensively tested, and may result in extended re-cropping intervals.
- Cultivation is recommended prior to re-cropping.
- Minimum re-cropping intervals apply for all crops following Palmero TX application. For advice on crops not listed below, contact Adama Australia.

CROP	MINIMUM RE-CROPPING INTERVAL	MINIMUM RAINFALL REQUIREMENT*
Wheat	6 months	100 mm
Barley		
Oats		
Canola	9 months	350 mm
Faba beans		250 mm
Field peas		
Lentils	21 months	500 mm
Clover		
Lucerne	9 months	350 mm
Medic	21 months	500 mm
Maize	6 months	100 mm
Mungbeans	7 months	250 mm
Sorghum		
Soybeans		
Sunflowers		
Cotton		

* Total minimum rainfall from Palmero TX use until planting of the subsequent crop.

DO NOT include flood or furrow irrigation in the minimum rainfall requirement.

Under dry conditions, the breakdown of Palmero TX in the soil may take longer and further advice should be sought from Adama Australia.

MCPA + bromoxynil + picolinafen

(See picolinafen + bromoxynil + MCPA)

MCPA + bromoxynil + diflufenican

(See diflufenican + bromoxynil + MCPA)

MCPA + diflufenican

(See diflufenican + MCPA)

MCPA + imazapic + imazapyr

(See imazapic + imazapyr + MCPA)

MCPA + picloram

(See picloram + MCPA)

MCPA + picolinafen

(See picolinafen + MCPA)

MCPA + pyrasulfotole

(See pyrasulfotole + MCPA)

Mesosulfuron-methyl

Group B Herbicide

(Reference label: Atlantis® OD Selective Herbicide APVMA Approval No: 62551/0209)

Crop rotation recommendations

Minimum re-cropping intervals apply for all crops following Atlantis OD application.

The application of a Group B herbicide in the crop following Atlantis OD use may result in increased crop effects. Consult the manufacturer of Atlantis OD for advice in these situations.

Rainfall of less than 250 mm following Atlantis OD use will result in extended re-cropping intervals for winter crops sown the following season.

Patchy rain, with extended dry periods may also result in extended re-cropping intervals, even when rainfall exceeds 250 mm. If in doubt, seek specialist advice.

Rainfall of less than 500 mm following Atlantis OD use may result in extended re-cropping intervals for summer crops sown the following year.

Use on soils with a pH greater than 8.5 (soil in water) has not been extensively tested and is not recommended. For advice on crops not listed below, contact your local reseller or Bayer CropScience representative.

CROP		MINIMUM RE-CROPPING INTERVAL
Winter crops -	Wheat	1 day
	Barley	9 months
	Oats	9 months
	Triticale	9 months
	Faba beans	11 months
	Canola	9 months
	Chickpeas	9 months
	Lentils	11 months
	Lucerne, Subterranean clover	21 months*
	Lucerne, Subterranean clover	9 months**
	Lupins	9 months
	Medic	21 months
	Peas	9 months
	Vetch	9 months
Summer crops -	Cotton	12 months
	Maize	12 months
	Mungbeans	12 months
	Sorghum	12 months
	Soybeans	12 months
	Sunflowers	12 months

* In soils of pH > 8.0 (1:5 water suspension) and under low rainfall conditions some slight discolouration may occur, however establishment and growth through the season is generally not affected.

** In soils of pH < 8.0 (1:5 water suspension) and under conditions where good seasonal rainfall has occurred between spraying and sowing (i.e. more than 250 mm)

Metazachlor

Group K Herbicide

(Reference label: Butisan® Herbicide APVMA Approval No: 80664/111095)

Re-cropping interval:

Crops	Minimal cropping interval
All crops including Wheat, Durum, Barley, Oats, Field peas, Chickpeas, Lupins	12 months

Metolachlor

(See S-metolachlor)

Metosulam

Group B Herbicide

(Reference label: Eclipse® 100 SC Herbicide APVMA Approval No: 63231/49718)

Protection of crop, native and other non-target plants

DO NOT plant susceptible crops until nine months after application of Eclipse. Susceptible crops include canola or any other brassica crops, field peas, beans, medics, lucerne and subterranean clover.

Metribuzin

Group C Herbicide

(Reference label: Sencor® 480 SC Selective Herbicide APVMA Approval No: 31791/108246)

Plant-back requirement

To minimise risk to follow-on sensitive crops such as beetroot, brassicas, capsicums, cotton, cucurbits, lettuce, onions and sunflowers, it is advisable to work land thoroughly - allow at least 6 months (12 months for cucurbits) between application of Sencor 480SC and sowing seed of these sensitive crops. A longer period may be required following long dry periods between crops. If rates of Sencor 480SC higher than 1.5 L/ha were used, allow at least 12 months before planting these crops.

Metsulfuron-methyl

Group C Herbicide

(Reference label: Lynx® WG Herbicide APVMA Approval No: 59851/100091)

WINTER CEREAL CROP SITUATION

Crop rotation recommendations

Minimum re-cropping intervals for crops are listed below.

DO NOT rotate crops other than those mentioned below to land previously treated with Lynx WG, or other metsulfuron-methyl formulations. Crop tolerance (to maturity) should be determined on a small scale before sowing into larger areas.

MINIMUM RE-CROPPING INTERVAL				
Soil pH*	10 days	6 weeks	9 months	14 months
5.6 – 8.5	Wheat	Barley, Cereal Rye, Triticale	Chickpeas, Faba beans, Linseed, Lucerne, Lupins, Medics**, Oats, Peas, Rapeseed, Safflower, Subterranean, Clover**	Japanese millet, Maize, Panorama millet White, French millet, Sorghum, Soybeans, Sunflower
8.6 and above	Tolerance of crops (grown through to maturity) should be determined on a small scale, in the previous season, before sowing into larger areas.			

* Soil pH is to be determined by laboratory analysis using the 1:5, Soil: water suspension method.

**Involves natural regeneration of subterranean clover and medics.

ESTABLISHED PASTURES OR PASTURE RENOVATION

Crop rotation recommendations

The Lynx WG treated area may be replanted to any of the specified pasture species after the interval indicated in the following table:

Soil pH*	Pasture Species	RATE g/ha	Minimum Re-crop Rainfall	Minimum Interval
5.5 and below	Subterranean clover ^(a) and Haifa white clover	5	150 mm	12 weeks
		10		20 weeks
		15		
	Cocksfoot and Phalaris species	5	100 mm	8 weeks
		10		
		15		16 weeks
Perennial ryegrass and Fescue species	5	150 mm	20 weeks	
	10			
	15			
5.6 – 6.5	Subterranean clover ^(a) , Haifa white clover, Perennial ryegrass spp. and Fescue spp.	Bioassay ^(b)		
		Cocksfoot and Phalaris species	5, 10	175 mm
			15	Bioassay ^(b)
6.6 and above	Bioassay ^(b)			

^(a) Varieties: Junee, Karridale, Seaton Park and Trikkala.

^(b) Tolerance of pasture species should be determined on a small scale, in the previous season, before sowing into larger areas.

* Soil pH is to be determined by laboratory analysis using the 1:5, soil water suspension method.

Oxyfluorfen

Group G Herbicide

(Reference label: GoalTender® Herbicide APVMA Approval No: 62671/100919)

Safe sowing intervals

GoalTender Herbicide at up to 37.5 mL/ha may be safely applied 1 day prior to planting broadacre crops such as cereals (wheat, barley, oats, triticale), canola, pulses (lupins, faba beans, field peas) and undersown pastures (lucerne, clover, medics, ryegrass, phalaris, cocksfoot) and 7 days minimum prior to planting cotton or soybeans, provided minimum tillage planting equipment is used with minimal soil disturbance. Inversion, mixing of surface soil with that in the planting zone or covering seed with treated soil may result in injury to emerging crop seedlings.

Avoid covering the seed with soil treated with GoalTender Herbicide during the planting operation to minimise crop injury.

GoalTender Herbicide has residual soil activity, especially when applied at rates greater than 37.5 mL/ha and on small-seeded horticultural crops. Plant-back intervals in the following table for horticultural crops must be observed if more than 37.5 mL/ha GoalTender Herbicide has been applied.

Safe Sowing Intervals for Horticultural Crops (Days)

GoalTender Herbicide rate	Up to 37.5 mL/ha	500 mL/ha
Beans	7	60
Brassicas	14	90
Capsicums	14	90
Carrots	14	90
Cucurbits	14	60
Lettuce	14	90
Onions	21	180
Potatoes	7	60
Tomatoes	14	60

Pendimethalin

Group D Herbicide

(Reference label: Stomp® Xtra Herbicide APVMA Approval No: 52757/104221)

Following crops

In the event of crop failure the soil should be cultivated to a minimum depth of 15 cm to ensure any residues are evenly dispersed throughout the soil. If a maize crop fails due to weather conditions or some other reason, maize can be replanted the same year without adverse effects but seeding depth must be below the retiled area.

The following crops may be sown after a minimum interval of 2 months after application of Stomp Xtra:

Carrots, parsnips, parsley, celery, potatoes, peas, French beans, transplanted brassicas, transplanted lettuce, transplanted tomatoes, transplanted capsicums.

The following crops may be sown after a minimum interval of 5 months after application of Stomp Xtra:

Turnips, lettuce, radish, Brussels sprouts, cabbage, cauliflower, broccoli, onions, leeks, sweetcorn, pumpkins, squash, melons, cucumbers.

The following crops may be sown after a minimum interval of 12 months after application of Stomp Xtra:

Redbeet (beetroot), spinach, silverbeet, poppy.

Picloram

Group I Herbicide

(Reference label: Picoflex® Herbicide APVMA Approval No: 84465/110471)

Precaution

Susceptible crops and plants can be damaged by soil residues during both growing and dormant periods. Minimum re-cropping periods are recommended to minimise risk of rotational crop injury.

In the season following application of this product the regeneration or establishment of sensitive legumes (clover, medics, peas, lupins) may be adversely affected by soil residues.

Minimum re-cropping periods

- Picloram remains active in the soil for extended periods depending on rate of application, soil type, rainfall, temperature, humidity, soil moisture and soil organic matter.
- Note: Before using Picoflex Herbicide in tank mixes with other herbicides, check the plant-back period information on all product labels. The most residual product, i.e. the product with the longest plant-back period, will determine the time between spraying and planting.
- The plant-back periods listed below do not commence until all stubble residue has broken down.

Rates of Picoflex up to 110 mL/ha:

Northern NSW and Qld

Plant-back periods for rotational crops following application of Picoflex at rates between 85-110 mL/ha on black cracking clay soils (Table below). These plant-back periods are based on a normal rainfall pattern. During drought conditions (or when rainfall is less than 100 mm for a period of 4 months after application) the plant-back period may be significantly longer.

Winter Crop	Plant-back period (Months)	Summer Crop	Plant-back Period (Months)
Wheat	2	Sorghum	2
Barley	2	Cotton	12
Canola	4	Mungbean	12
Chickpea	6	Soybean	12
Faba bean	4		
Lucerne	9		

Western Australia and soil types not mentioned above

DO NOT plant susceptible broadleaf crops within 12 months of applying the product. Cereal crops and grasses can be sown safely 2 months after using Picoflex for in crop weed control.

Rates of Picoflex greater than 110 mL/ha:

- **DO NOT** rotate susceptible plants until an adequately sensitive bioassay or chemical test shows that no detectable picloram is present in the soil.

Picloram + 2,4-D

Group I Herbicide

(Reference label: Tordon® 75-D Herbicide APVMA Approval No: 40487/57640)

Protection of crops, native and other non-target plants

Crops susceptible to Tordon 75-D include but are not limited to; peas, lupins, lucerne, navy beans, soybeans, and other legumes; cotton, fruit, hops, ornamentals, potatoes, safflower, sugar beet, sunflower, tobacco, tomatoes, vegetables and vines.

DO NOT plant susceptible crops within 12 months of applying winter or summer cereal use rates of this product. Cereal crops and grasses can be sown safely after using Tordon 75-D.

Rates in excess of these will result in more persistent soil residues. Therefore, do not rotate susceptible plants until an adequately sensitive bioassay or chemical test shows that no detectable picloram is present within soil.

Picloram + aminopyralid + 2,4-D

Group I Herbicide

(Reference label: FallowBoss® Tordon® Herbicide APVMA Approval No: 69106/118225)

MINIMUM RE-CROPPING PERIODS following application in cereals and fallow

Aminopyralid and picloram remain active in the soil for extended periods depending on rate of application, soil type (clay content), rainfall, temperature, humidity, soil moisture and soil organic matter. The following tables show plant-back periods to particular crops following application of FallowBoss Tordon herbicide in Queensland and NSW.

Northern New South Wales & Queensland

Plant-back periods for rotational crops following application of FallowBoss Tordon herbicide up to 700 mL/ha on black cracking clay soils. These plant-back periods are also required for fallow crops and are based on normal rainfall pattern. During drought conditions (or when rainfall is less than 100 mm for a period of four (4) months or greater) the plant-back period may be significantly longer. Under such circumstances a soil bioassay is required, before planting the next crop.

Winter crop	Plant-back period (months)
Wheat	4
Barley	4
Canola	4
Chickpea	6
Faba bean	6
Summer crop	Plant-back period (months)
Sorghum	4
Lucerne	12
Mungbean	12
Sunflower	12
Soybean	12
Cotton	12

Southern New South Wales

Plant-back periods for rotational crops following application of FallowBoss Tordon herbicide up to 700 mL/ha. These plant-back periods are also required for fallow crops and are based on normal rainfall pattern. During drought conditions (or when rainfall is less than 100 mm for a period of four (4) months or greater) the plant-back period may be significantly longer. Under such circumstances a soil bioassay is required before planting the next crop.

Crops	Plant-back period (months)
Barley, wheat	9
Canola	12
Chickpea, Faba bean, Field pea, Lucerne, Lupin, Medic, Subterranean clover; Cotton	20

Note: Before using FallowBoss Tordon herbicide in tank mixes with other herbicides, check the plant-back information on all product labels. The most residual product, i.e. the product with the longest plant-back period, will determine the time between spraying and planting the next crop. It is recommended that a soil bioassay be conducted prior to planting a susceptible crop (see below for the method).

MINIMUM RE-CROPPING PERIODS following application in pastures

Due to the wide variation in application rates and methods of application recommended for pastures a minimum of 12 months should elapse between application and planting a susceptible crop AND a soil bioassay should be conducted before sowing. A simple bioassay can be conducted by collecting at least 10 spade spits of soil to a depth of 200 mm from around the paddock and thoroughly mixing the soil together. Place some of this soil in a shallow container to a depth of 3-5 cm and sow 100 seeds of the susceptible plant to be grown (subterranean or white clover is a good indicator plant where it is not practical to use the susceptible plant) into the soil. Keep in a warm and well lit location and ensure the soil does not dry out. After crop emergence, check the number of plants that have germinated and seedling vigour. Symptoms of FallowBoss Tordon herbicide residues include non-germination or low plant emergence, leaf cupping, leaf whitening, stem elongation and twisting. If these symptoms occur – do not grow the susceptible plant. Repeat the bioassay again after a further time interval.

Protection of crops, native and other non-target plants

DO NOT use on land to be cultivated for growing susceptible crops for up to 20 months of applying rates in excess of 1 L/ha of FallowBoss Tordon herbicide, except where indicated in the MINIMUM RE-CROPPING PERIODS section of the GENERAL INSTRUCTIONS. Rates in excess of 1 L/ha will result in more persistent soil residues. Therefore, do not rotate susceptible plants until an adequately sensitive bioassay or chemical test shows that no detectable picloram or aminopyralid is present within soil. Crops susceptible to FallowBoss Tordon herbicide include but are not limited to; peas, lupins, lucerne, navy beans, soybeans, and other legumes; cotton, fruit, hops, ornamentals, potatoes, safflower, sugar beet, sunflower, tobacco, tomatoes, vegetables and vines. This product will kill legumes (clovers, medics) present in the crop at the time of spraying. In the season following application of this product the regeneration or establishment of sensitive legumes (clover, medics, peas, and lupins) may be adversely affected by soil residues.

Management of residues in compost, mulches and animal waste

DO NOT send treated crops off-farm as hay, silage or for use as animal bedding. Picloram and aminopyralid residues from treated plants may pass into animal manure, composts, mushroom substrates, mulches and cause injury to sensitive broadleaf plants.

DO NOT spread manure from animals that have grazed or consumed forage or hay from treated areas on land used for growing susceptible broadleaf crops.

Stubble from treated crops

Ensure that harvesters effectively spread crop straw and do not leave a heavy 'header trail' after harvest. Burn (if legal in the area), slash or incorporate stubble as soon as practical after harvest and as long as possible before planting next year to allow microbial breakdown of any residues in straw. Breakdown of residues in decomposing plants is more rapid under warm, moist soil conditions. Heavy stubble loads may carry more residue into the following season. Where heavy stubble burdens and/or non-wetting soils exist and less than the recommended rain amount have occurred from application to planting the susceptible crop, only plant a winter or summer cereal or canola.

Planting crops 'dry' without significant rain in the 'autumn break' increases the risk of injury to susceptible crops. This practice should be avoided, or only plant a winter or irrigated summer cereal crop or canola. In severely dry conditions, where less than 30% of average annual rainfall and/or less than the minimum rain has fallen between application and planting the next year, only plant a winter or irrigated summer cereal or canola.

Where residues of picloram and aminopyralid are suspected to be present at the time of planting a new crop, a soil bioassay should be conducted.

Picloram + aminopyralid + triclopyr

Group I Herbicide

(Reference label: Grazon® Extra Herbicide APVMA Approval No: 60830/105077)

Minimum re-cropping periods:

Aminopyralid and picloram remain active in the soil for extended periods depending on the rate of application, soil type (clay content), rainfall, temperature, humidity, soil moisture and soil organic matter. The following tables show plant-back periods to particular crops following application of Grazon Extra in different areas/situations of Australia.

Table A: Northern NSW & Queensland

Plant-back periods for rotational crops following application of Grazon Extra for rates up to 600 mL/ha on black cracking clay soils. These plant-back periods are based on a normal rainfall pattern. During drought conditions (or when the rainfall is less than 100 mm for a period of 4 months or greater) the plant-back period may be significantly longer.

Plant-back periods for crops following the application of Grazon Extra for rates up to 600 mL/ha.				
RATE mL/ha	200	300	400	600
CROP	Months			
Wheat	2	2	4	4
Barley	2	2	4	4
Canola	2	4	4	4
Faba bean	4	4	6	6
Chickpea	4	6	6	6
Lucerne	6	9	9	9

Table B: Blanket Wiper Application

Plant-back periods for crops following blanket wiper application.	
CROP	Months
Broadleaf crops	18
Lucerne	6 This will allow any potential soil residues to dissipate, if any, and allow effective control.

Table C: Southern NSW

Plant-back periods for rotational crops following application of Grazon Extra for rates up to 500 mL/ha.	
CROP	Plant-back Period (months)
Barley, Canola, Wheat	9
Chickpea, Faba bean, Field pea, Lucerne, Lupin, Medic, Subterranean clover	24

Note: Before using Grazon Extra in tank mixes with other herbicides, check the plant-back information on all product labels. The most residual product, i.e. the product with the longest plant-back period will determine the time between spraying and planting.

Protection of crops, native and other non-target plants

Crops susceptible to Grazon Extra include, but are not limited to: peas, lupins, lucerne, navy beans, peanuts, soybeans and other legumes, cotton, flowers, fruit, hops, ornamentals, shade trees and Pinus spp., potatoes, safflower, sugar beet, sunflowers, tobacco, tomatoes, vegetables and vines.

Grazon Extra is damaging to susceptible crops during both growing and dormant periods. Grasses are normally unaffected and establish quickly after treatment. Picloram and aminopyralid, two of the active constituents in this product can remain active in the soil for extended periods depending on soil type and application rate, rainfall, temperature, humidity, soil moisture and soil organic matter.

Management of residues in compost, mulches and animal waste

DO NOT cut pasture for hay or silage production within 6 months of application, where it is intended for use off-farm.

DO NOT use treated plant material to make compost, mulches or mushroom substrate.

DO NOT send straw from treated pastures off-farm for these purposes or for animal bedding.

DO NOT send animal manure, dairy shed and feed pad effluent that has been collected from animals grazing or fed pastures treated within the previous 6 months off-farm. Spreading/irrigating this manure/effluent may cause damage to clover and other susceptible plants.

DO NOT send compost made from animal waste that has been collected from animals grazing or fed pastures treated within the previous 6 months off-farm. Such compost may cause damage to clover and other susceptible plants.

DO NOT apply animal waste (e.g. manure, slurry) collected from animals grazing or fed pastures treated within the previous 6 months to susceptible plants or land to be used to grow susceptible plants.

DO NOT grow susceptible plants within the relevant plant-back period in fields treated with manure/effluent from farms where animals have grazed or been fed treated pasture until a field bioassay shows there are no residues in the soil at levels injurious to the susceptible plants (see the Minimum re-cropping periods section).

To promote herbicide decomposition, manure should be evenly incorporated in the surface soil. Breakdown of residues in decomposing plants or manure is more rapid under warm, moist soil conditions and may be enhanced by supplemental irrigation.

Soil bioassay

A simple bioassay can be conducted by collecting at least 10 spade spits of soil to a depth of 200 mm from around the paddock and thoroughly mixing the soil together. Place some of this soil in a shallow container to a depth of 3-5 cm and sow 100 seeds of the susceptible plant to be grown (subterranean or white clover is a good indicator plant where it is not practical to use the susceptible crop) into the soil.

Keep in a warm and well lit location and ensure the soil does not dry out. After plant emergence, check the number of plants that have germinated and seedling vigour. Symptoms of Grazon residues include non-germination or low plant emergence, leaf cupping, leaf whitening, stem elongation and twisting. If these symptoms occur do not grow the susceptible plant. Repeat the bioassay again after a further time interval.

Further information on residues in composts, mulches and animal wastes can be found at www.dowagrososciences.com.au

Picloram + MCPA

Group I Herbicide

(Reference label: Trooper® 242 Herbicide APVMA Approval No: 55555/109338)

Minimum re-cropping periods

Picloram, one of the active constituents in this product, remains active in the soil for extended periods depending on the rate of application, soil type, rainfall, temperature, humidity, soil moisture and soil organic matter. When used in the presence of stubble, plant-back times do not start until all stubble residue has broken down. Picloram, may bind to stubble, but upon physical stubble breakdown, may then be released and made available to plants growing in the soil. Sensitive plants can be adversely affected.

DO NOT plant susceptible broadleaf crops within 12 months of applying product. Cereal crops and grasses can be sown safely after using Trooper 242 for in crop weed control.

Protection of crop, native and other non-target plants

DO NOT use on land to be cultivated for growing susceptible crops within 12 months of applying Trooper 242. Legumes, vines, vegetables, cotton, tomatoes, ornamentals and many other plants are highly susceptible to Trooper 242 during both growing and dormant periods. Cereal crops and grasses can be sown after using Trooper 242. Trooper 242 will kill legumes (clovers, medics) present in the crop at the time of spraying. In the season following application of Trooper 242 the regeneration or establishment of sensitive legumes (clover, medics, peas, lupins) may be adversely affected by soil residues.

DO NOT apply close to or on areas containing roots of desirable vegetation, where treated soil may be washed to areas growing, or to be planted to desirable plants, or on sites where surface water from heavy rain can be expected to run off to areas containing or to be planted to susceptible crops or plants.

DO NOT move soil which may have been sprayed to areas where desirable plants are to be grown.

Picloram + triclopyr

Group I Herbicide

(Reference label: Fightback® Herbicide APVMA Approval No: 56847/63181)

General instructions

Minimum re-cropping periods - Black Cracking Clay Soils, NSW & Qld.

Table A: Boom Application

Plant-back periods for crops following the application of Fightback for rates up to 600 mL/ha.

RATE mL/ha	200	300	400	600
CROP	Months			
Wheat	2	2	4	4
Barley	2	2	4	4
Canola	2	4	4	4
Faba bean	4	4	6	6
Chickpea	4	6	6	6
Lucerne	6	9	9	9

These plant-back periods are based on a normal rainfall pattern. During drought conditions (or when the rainfall is less than 100 mm for a period of 4 months or greater) the plant-back period may be significantly longer.

Table B: Blanket Wiper Application

Plant-back periods for crops following wiper application	
CROP	Months
Broadleaf crops	18
Lucerne	6

This will allow any potential soil residues to dissipate, if any, and allow effective control.

Note: Before using Fightback in tank mixes with other herbicides, check the plant-back information on all product labels. The most residual product, i.e. the product with the longest plant-back period, will determine the time between spraying and planting.

Protection of crops, native and other non-target plants

Crops susceptible to Fightback include, but are not limited to: peas, lupins, lucerne, navy beans, peanuts, soybeans and other legumes, cotton, flowers, fruit, hops, ornamentals, shade trees and *Pinus* spp., potatoes, safflower, sugar beet, sunflowers, tobacco, tomatoes, vegetables and vines.

Fightback is damaging to susceptible crops during both growing and dormant periods. Grasses are normally unaffected and establish quickly after treatment. Picloram, one of the active constituents in this product can remain active in the soil for extended periods depending on soil type and application rate, rainfall, temperature, humidity, soil moisture and soil organic matter.

Picolinafen

Group F Herbicide

(Reference label: Sniper® Herbicide APVMA Approval No: 52102/1101)

General instructions

Sniper Herbicide is an early post-emergence, foliar-absorbed product with some soil activity. Under favourable conditions, this pre-emergence activity will provide some control of subsequently germinating weed seedlings.

Picolinafen + bromoxynil

Group F + C Herbicide

(Reference label: Nufarm Eliminar® C Herbicide APVMA Approval No: 69510/116314)

General instructions

This product is a post-emergence contact herbicide, with short residual activity.

Picolinafen + MCPA

Group F + I Herbicide

(Reference label: Nufarm Paragon® Herbicide APVMA Approval No: 58896/0310)

General instructions

Paragon Herbicide is an early post-emergence, foliar-absorbed product with short soil activity. Under favourable conditions, this pre-emergence activity will provide some control of subsequently germinating weed seedlings.

Picolinafen + bromoxynil + MCPA

Group F + C + I Herbicide

(Reference label: Paragon® Xtra Herbicide APVMA Approval No: 69558/61131)

General instructions

Paragon Xtra Herbicide is an early post-emergence, foliar-absorbed product with short soil activity. Under favourable conditions, this pre-emergence activity will provide some control of subsequently germinating weed seedlings.

Prometryn

Group C Herbicide

(Reference label: Flowable Gesagard® 500SC Liquid Herbicide APVMA Approval No: 47653/0402)

Protection of crop, native and other non-target plants

DO NOT plant crops other than carrots in Gesagard treated cotton land for at least 6 months after the cotton crop has been removed.

DO NOT plant crops other than transplanted celery, chickpeas or carrots in areas within 6 months following an application of the product at rates above 2.2 L/ha.

Prometryn + fluometuron

(See fluometuron + prometryn)

Propaquizafop

Group A Herbicide

(Reference label: Shogun® Herbicide APVMA Approval No: 60764/100103)

Protection of crop, native and other non-target plants

DO NOT plant cereal crops for a period of 28 days after application of Shogun Herbicide.

Propyzamide

Group D Herbicide

(Reference label: Rustler® Selective Herbicide APVMA Approval No: 61360/112626)

Crop rotation recommendations

Rustler is predominantly broken down in the soil through microbial degradation. Microbial activity is typically favoured by moist and warm aerobic soils. Minimum re-cropping intervals for Rustler have been recommended to minimise the risk of damage to rotational crops (see table below). However, considerable variations in environmental, edaphic and agronomic factors affecting the soil microbial activity, mean that it is not possible to absolutely eliminate all risks and potential for damage to following crops:

Crop	Re-cropping Interval Recommendation
Cereals (Wheat, Barley, Oats and Triticale)	9 months [^]
Canola, Winter grain legumes (including Lentils, Lupins, Chickpeas, Faba bean and Field peas)	Can be sown into soil treated with Rustler in a failed crop scenario, however Rustler (or any other propyzamide products) should not be applied prior to sowing the replacement crop (i.e. twice in one growing season).

[^] Provided there has been sufficient rainfall (estimated >250mm) over summer to support microbial activity and degradation of Rustler. Conditions that aren't conducive to adequate soil microbial degradation may result in extended re-cropping intervals.

For advice on crops and situations not mentioned above, contact FMC Australasia Pty Ltd.

Prosulfocarb

Group J Herbicide

(Reference label: Arcade® Herbicide APVMA Approval No: 81708/114606)

General instructions

Arcade is a short residual, soil applied, pre-emergent or very early post-herbicide that is absorbed by the roots and shoots (coleoptile) of germinating seedlings with inhibition of growth in the meristematic region. Foliar uptake is possible but of lower effect.

Prosulfocarb + s-metolachlor

Group J + K Herbicide

(Reference label: Boxer® Gold Herbicide APVMA Approval No: 61234/100351)

Protection of crop, native and other non-target plants

DO NOT sow susceptible crops within 6 months of herbicide application.

Prosulfocarb + tri-allate

Group J Herbicide

(Reference label: Imtrade Diablo Duo® Herbicide APVMA Approval No: 84059/109594)

Protection of crop, native and other non-target plants

DO NOT sow susceptible crops within 6 months of herbicide application.

Prosulfocarb + trifluralin

(See trifluralin + prosulfocarb)

Pyrasulfotole + bromoxynil

Group H + C Herbicide

(Reference label: Velocity® Selective Herbicide APVMA Approval No: 62444/53867)

Crop rotation recommendations

Minimum re-cropping intervals apply for all crops following Velocity Selective Herbicide application.

Re-cropping intervals are dependent on the rate of product applied. Areas that receive double rates (boom overlaps) may show symptoms of damage in sensitive crops. This is generally restricted to discolouration (bleaching) of the crop but may also result in biomass reduction or reduced yields in some situations.

For advice on crops not listed below, contact the manufacturer, Bayer CropScience Pty Ltd.

Rainfall/irrigation – winter and summer re-cropping

For crops listed as requiring a minimum amount of rainfall or irrigation in combination with a set re-cropping interval: Rainfall and irrigation totalling less than the stated amount in the tables below following use of Velocity may result in an extended re-cropping interval.

Patchy rain, with extended dry periods may also result in an extended re-cropping intervals, even when rainfall exceeds the minimum stated. If in doubt, seek specialist advice.

Dry conditions or less than the recommended minimum rainfall

Velocity breaks down by microbial degradation, which is favoured by warm, moist, aerobic soil. Where less than the minimum rain has fallen between application and planting the next year, it is recommended to only plant a cereal crop.

pH

Application to soils with a pH greater than 8.4 (soil in water) has not been tested and is not recommended.

Re-cropping symptoms are reduced on acid soils (pH < 6.5 soil in water, pH < 6.0 in CaCl₂).

Tank mixture with other herbicides

In the event that a tank mixture of Velocity Selective Herbicide and another herbicide has been used, the longer re-cropping interval of the tank mix products should be observed for the crop in question.

Crop – winter sown	Velocity rate applied	Minimum rainfall/irrigation required	Re-cropping interval
Wheat, Barley, Oat, Triticale	up to 1.0 L/ha		3 weeks
Canola, Clover*, Chickpea, Faba bean*, Field pea, Lentil*, Lucerne, Lupin, Vetch	670 mL/ha	250	9 months
Alkaline or neutral soils Canola, Chickpea, Field pea, Lucerne, Lupin, Vetch	1.0 L/ha**	250	
Acid soils (pH <6.5 in water, pH <6.0 in CaCl₂) Canola, Chickpea, Clover, Faba bean, Field pea, Lentil, Lucerne, Lupin, Medic, Vetch	1.0 L/ha	250	
Alkaline or neutral soils Lentil, Medic Note: On soils with free limestone DO NOT use Velocity above 670 mL/ha unless substantial biomass reduction (medic) or discolouration (lentil, medic) is accepted in areas of boom overlap.	1.0 L/ha (see note in Crop column)	500	21 months

For winter re-cropping, transient biomass reduction or discolouration may occur where re-cropped following Velocity application. When used as directed grain yield is not compromised where transient biomass reduction or discolouration occurs.

* Where Velocity at 670 mL/ha is applied on alkaline soils, re-cropping areas that receive double rates (boom overlaps) may show increased symptoms of damage in crops such as clover, faba bean and lentil. This is generally restricted to discolouration (bleaching) of the crop but may also result in biomass reduction or reduced yields in some situations.

**Where Velocity at 1.0 L/ha is applied on alkaline soils, re-cropping areas that receive double rates (boom overlaps) may show increased symptoms of damage in crops such as canola, field pea, lentil, lupin, medic and vetch. This is generally restricted to discolouration (bleaching) of the crop but may also result in biomass reduction or reduced yields in some situations.

Crop – summer sown	Velocity rate applied	Minimum rainfall/irrigation required	Re-cropping interval
Maize, Sorghum	up to 1.0 L/ha		8 weeks
Cotton, Soybean, Sunflower	up to 670 mL/ha	300 mm	14 months
Mungbean	up to 1.0 L/ha***	300 mm	14 months
Cotton, Soybean, Sunflower	up to 1.0 L/ha***	500 mm	14 months

For summer re-cropping, transient biomass reduction or discolouration may occur where re-cropped after Velocity application. When used as directed grain yield is not compromised where transient biomass reduction or discolouration occurs.

***Where Velocity at 1.0 L/ha is applied, re-cropping areas that receive double rates (boom overlaps) may show increased symptoms of damage. This is generally restricted to discolouration (bleaching) of the crop but may also result in biomass reduction in some situations.

Pyrasulfotole + MCPA

Group H + I Herbicide

(Reference label: Precept® Selective Herbicide APVMA Approval No: 60897/55647)

Crop rotation recommendations

Minimum re-cropping intervals apply for all crops following Precept Selective Herbicide application.

Re-cropping intervals are dependent on the rate of product applied. Areas that receive double rates (boom overlaps) may show symptoms of damage in sensitive crops. This is generally restricted to discolouration (bleaching) of the crop but may also result in biomass reduction or reduced yields in some situations.

For advice on crops not listed below, contact the manufacturer, Bayer CropScience Pty Ltd.

Rainfall/irrigation –winter and summer re-cropping

For crops listed as requiring a minimum amount of rainfall or irrigation in combination with a set re-cropping interval; rainfall and irrigation totalling less than the stated amount in the tables below following use of Precept may result in an extended re-cropping interval; patchy rain, with extended dry periods may also result in an extended re-cropping intervals, even when rainfall exceeds the minimum stated. If in doubt, seek specialist advice.

Dry conditions or less than the recommended minimum rainfall and irrigation

Where less than the minimum rain has fallen between application and planting the next year, it is recommended to only plant a cereal.

pH

Application to soils with a pH greater than 8.4 (soil in water) has not been tested and is not recommended.

Re-cropping symptoms are reduced on acid soils (pH < 6.5 soil in water, pH < 6.0 in CaCl₂).

Tank mixture with other herbicides

In the event that a tank mixture of Precept and another herbicide has been used, the longer re-cropping interval of the tank mix products should be observed for the crop in question.

Crop – winter sown	Velocity rate applied	Minimum rainfall/irrigation required	Re-cropping interval
Wheat, Barley, Oats, Triticale	up to 2 L/ha	-	3 weeks
Canola, Clover*, Chickpea, Faba bean*, Field pea, Lentil*, Lucerne, Lupin, Vetch	1 L/ha	250 mm	9 months
Alkaline or neutral soils Canola, Chickpea, Field pea, Lucerne, Lupin, Vetch	2 L/ha**	250 mm	
Acid soils (pH < 6.5 in water, pH < 6.0 in CaCl₂) Canola, Chickpea, Clover, Faba bean, Field pea, Lentil, Lucerne, Lupin, Medic, Vetch	2 L/ha	250 mm	
Alkaline soils Lentil, Medic Note: On soils with free limestone DO NOT use Precept above 1 L/ha unless substantial biomass reduction (medic) or discolouration (lentil, medic) is accepted in areas of boom overlap	2 L/ha (see note in Crop column)	500 mm	21 months

For winter re-cropping, transient biomass reduction or discolouration may occur where re-cropped following Precept application. When used as directed grain yield is not compromised where transient biomass reduction or discolouration occurs.

* Where Precept at 1 L/ha is applied on alkaline soils, re-cropped areas that receive double rates (boom overlaps) may show increased symptoms of damage in crops such as clover, faba bean and lentil. This is generally restricted to discolouration (bleaching) of the crop but may also result in biomass reduction or reduced yields in some situations.

**Where Precept at 2 L/ha is applied on alkaline soils, re-cropped areas that receive double rates (boom overlaps) may show increased symptoms of damage in crops such as canola, field pea, lentil, lupin, medic and vetch. This is generally restricted to discolouration (bleaching) of the crop but may also result in biomass reduction or reduced yields in some situations.

Crop – summer sown	Velocity rate applied	Minimum rainfall/irrigation required	Re-cropping interval
Maize, Sorghum	up to 2 L/ha	-	8 weeks
Cotton, Soybean, Sunflower	up to 1 L/ha	300 mm	14 months
Mungbean	up to 2 L/ha***	300 mm	14 months
Cotton, Soybean, Sunflower	up to 2 L/ha***	500 mm	14 months

For summer re-cropping, transient biomass reduction or discolouration may occur where re-cropped after Precept application. When used as directed grain yield is not compromised where transient biomass reduction or discolouration occurs.

***Where Precept at 2 L/ha is applied, re-cropping areas that receive double rates (boom overlaps) may show increased symptoms of damage. This is generally restricted to discolouration (bleaching) of the crop but may also result in biomass reduction in some situations.

Pyroxasulfone

Group K Herbicide

(Reference label: Sakura® 850 WG Herbicide APVMA Approval No: 63998/107471)

Crop rotation recommendations

Sakura breaks down by microbial degradation, which is favoured by warm, moist aerobic soil.

Minimum re-cropping intervals (months after Sakura application) have been established for Sakura to minimise the risk of damage to following crops (see table below). However, environmental and agronomic factors make it impossible to eliminate all risk and therefore the potential for damage to following crops exists.

Rainfall of less than the minimum interim rainfall required (see table below) may result in extended re-cropping intervals. Interim rainfall is the total rainfall between the application of Sakura and planting of the particular following crop. For re-cropping with winter crops, where a minimum of 250 mm of interim rainfall is required, if rain from application to the end of spring is less than 125 mm and isolated heavy summer and autumn falls and break rains are required to achieve the 250 mm interim rainfall, then extended re-cropping intervals may apply.

Crops	Re-cropping recommendation	
	Minimum re-cropping interval	Minimum interim rainfall
Wheat (not durum wheat) and Triticale	0 months	0 mm
Cotton, Maize, Mungbeans, Sorghum, Soybeans and Sunflowers	5 months	150 mm
Barley, Canola*, Chickpeas**, Faba beans, Field peas**, Lentils**, Lupins**, Vetch and Subterranean clover	9 months	250 mm
Durum wheat, Oats, Lucerne and Medic	21 months	550 mm

* For Canola sown the year after the application of Sakura there may occasionally be some crop stunting but no yield reductions have been measured.

**Chickpeas, Field peas, Lentils and Lupins can be sown immediately after the application of Sakura where Sakura has not already been incorporated. However, where Sakura has been incorporated into the soil, for example, by a previous sowing operation for a subsequently failed crop, these legume crops should not be sown for at least 9 months after the application of Sakura.

For advice on crops and situations not listed above, contact Bayer CropScience.

Pyroxsulam

Group B Herbicide

(Reference label: Crusader® GoDRI® Herbicide APVMA Approval No: 82791/106777)

Crop rotation recommendations

Safe re-cropping periods apply for all crops following Crusader GoDRI application. Planting crops 'dry' without the minimum rainfall (as stated in the table below) increases the risk of injury to susceptible crops. Susceptible crops include, but are not limited to, those listed in the table below.

Plant-back periods

Crop to be sown	Application rate (g product/ha)	Minimum time from application to planting	Minimum rainfall requirement from application to planting
Barley, Oats, Wheat, Canola, Chickpeas, Faba beans, Field peas, Lupins, Lucerne, Medics, Ryegrass, Subterranean clover, Vetches, White clover. Note: For all other crops, consult your reseller or local Dow AgroSciences' representative.	70g	9 months	25mm rain or more

* On shallow, duplex or low organic matter soils and/or where rain or irrigation in one fall or over subsequent days is insufficient to thoroughly wet soil to 10 cm for one week or more in the summer to autumn period, extended plant-back times will apply and susceptible crops should not be planted for at least 12 months after application of Crusader GoDRI Herbicide. Contact Dow AgroSciences, your farm chemical supplier, consultant or local Department of Agriculture for advice.

Pyroxsulam + halauxifen

Group B + I Herbicide

(Reference label: Rexade® Herbicide APVMA Approval No: 82842/106918)

Crop rotation recommendations

Safe re-cropping periods apply for all crops following Rexade application. Planting crops 'dry' without the minimum rainfall (as stated in the table below) increases the risk of injury to susceptible crops. Susceptible crops include, but are not limited to, those listed in the table below.

AREA/STATE	CROP TO BE PLANTED	MINIMUM RAINFALL REQUIREMENT	MINIMUM TIME REQUIREMENT
SA, Sth NSW, Tas, Vic and WA (Winter dominant rainfall areas) All soils	Peas, Canola, Oats, Barley	75 mm	8 months
	Lentils, Subterranean clover, Chickpeas, Faba beans, Medic, Vetch, Peas, Lucerne	100 mm	8 months
Nth NSW, and Qld (Summer dominant rainfall areas)	Peas, Canola, Oats, Barley	100 mm	7 months
	Chickpeas, Clover, Faba beans, Lucerne, Vetch	125 mm	8 months
	Sorghum, Maize, Sunflower	100 mm	5 months
	Mungbeans	150 mm	5 months
	Cotton, Soybeans	150 mm	8 months

Rexade is primarily broken down in soil by microbial activity. Breakdown occurs relatively quickly with extended periods of soil moisture when soils are warm. Breakdown is likely to be slow in dry seasons, or in cold, waterlogged soils. Rainfall requirements are met only when soil moisture is maintained for an extended period. Light, intermittent rainfall, or very heavy rainfall with significant runoff is not "effective" rainfall.

Quizalofop-P-ethyl

Group A Herbicide

(Reference label: Targa®bolt 200 Herbicide APVMA Approval No: 61862/1208)

Protection of crop, native and other non-target plants

DO NOT plant cereal crops into the treated area for a period of 18 weeks after application of Targabolt 200 Herbicide.

Saflufenacil

Group G Herbicide

(Reference label: Sharpen® WG Herbicide APVMA Approval No: 62853/109515)

Crop plant-back & rotation recommendations

Sharpen WG Herbicide does not provide long-term residual activity; however, certain crops show sensitivity to soil residues. Refer to the following table for application-to-sow intervals applicable to the maximum label rate.

1 hour	1 day	6 weeks	16 weeks
Barley Wheat Oats Corn Chickpea Faba bean Field pea Lentil Lupin Subterranean clover	Cowpea Sorghum Soybean	Cotton Canola	Sunflower Other crops

Check the label of any product mixed with Sharpen WG Herbicide, to determine any plant-back periods or restrictions on use.

Sethoxydim + diclofop-methyl

(See diclofop-methyl + sethoxydim)

Sethoxydim + diclofop-methyl + fenoxaprop-P-ethyl

(See diclofop-methyl + sethoxydim + fenoxaprop-P-ethyl)

Simazine

Group C Herbicide

(Reference label: Titan Simazine 900 WG Herbicide APVMA Approval No: 62193/1007)

To avoid triazine carry-over

On acid soils (pH less than 6.5): The maximum rate of Atrazine 900 WG or Simazine 900 WG or a combination of the two products to be applied to the crop during the growing season is 2.2 kg/ha.

On alkaline soils (pH greater than 6.5): The maximum rate of Atrazine 900 WG or Simazine 900 WG or a combination of the two products to be applied to the crop during the growing season is 1.1 kg/ha.

Post-emergence use - It is recommended that Atrazine 900 WG only be used, and at rates of 1.1 kg/ha or less, on both acid or alkaline soils.

Protection of crop, native and other non-target plants

DO NOT plant crops other than those recommended on this label for at least 9 months following treatments at rates up to 2.5 kg/ha. At higher rates planting may not be possible for very long periods afterwards.

S-metolachlor

Group K Herbicide

(Reference label: Dual® Gold Herbicide APVMA Approval No: 50477/112583)

Crop replanting interval

DO NOT plant crops other than broccoli, brussel sprouts, cabbages, cauliflowers, cotton, maize, peanuts, soybeans, sunflowers, sweet corn, tobacco or CONCEP II treated sorghum within 6 months of application of Dual Gold.

S-metolachlor + atrazine

(See atrazine + s-metolachlor)

S-metolachlor + prosulfocarb

(See prosulfocarb + s-metolachlor)

Sulfosulfuron

Group B Herbicide

(Reference label: Titan Sulfosulfuron 750 WG APVMA Approval No: 67980/57217)

Crop rotation guidelines

Where the product is applied at the rate of 20 to 25g/ha: Wheat and triticale can be planted the following season without restrictions. For other specified crops, the Titan Sulfosulfuron 750 WG Herbicide treated area may be replanted after the interval indicated in the table below. These recommendations are made on the assumption that Titan Sulfosulfuron 750 WG Herbicide is applied to a wheat or triticale crop that reaches maturity in the season of application.

Plant-back period: VIC, NSW, WA, SA, TAS only

Soil pH (1:5 soil: water suspension method)	Replant Interval	Minimum rainfall ¹	Crop
6.5 or less	10 months	300mm	Canola, Chickpeas, Lentils, Lupins, Oats, Peas, Subterranean clover*
	12 months	300mm	Barley, Faba beans
6.5 to 8.5	10 months	300mm	Cereal rye
	22 months	600mm	Barley, Canola, Chickpeas, Faba beans, Lentils, Medic*, Oats, Peas, Vetch

¹ Minimum rainfall required between Titan Sulfosulfuron 750 WG Herbicide application and the sowing of the plant-back crop.

* Includes natural regeneration of Subterranean clover and Medics. **DO NOT** apply to soils with a pH (water) >8.5.

For all other crops refer to Titan Ag for further advice.

Terbuthylazine

Group C Herbicide

(Reference label: Terbyne® Xtreme® 875 WG Herbicide APVMA Approval No: 68613/112317)

Following crops

Terbyne Xtreme is broken down by microbial activity, which is favoured by moist soil. Soil which is intermittently dry and moist over the plant-back period may result in longer plant-backs. Observe the following plant-back intervals between the date of application to a fallow or crop and the planting date of following crops thus-

Crop to be planted after application of Terbyne Xtreme	Terbyne Xtreme application rate 0.86 Kg/ha	Minimum rainfall or irrigation	Terbyne Xtreme application rate 1.2 Kg/ha	Minimum rainfall or irrigation
Mungbeans, Soybeans	3 months	105 mm	4 months	140 mm
Barley, Oats, Wheat	4 months	140 mm	5 months	175 mm
All other crops	6 months	175 mm	6 months	175 mm
Cotton, Sorghum, TT Canola	Not required			

These plant-backs are based on normal seasonal rainfall (or irrigation) and need both the months and rainfall minimums. If there is a prolonged dry period and there are isolated heavy falls, the plant-back interval may need to be longer than indicated by the rainfall totals and further advice should be sought from Sipcam Pacific Australia Pty Ltd.

Terbuthylazine + isoxaflutole

(See isoxaflutole + terbuthylazine)

Terbutryn

Group C Herbicide

(Reference label: Igran® 500 Flowable Liquid Herbicide APVMA Approval No: 58673/113683)

Crop rotational guidelines – Igran + Logran® 750 WG / triasulfuron WG tank mixture.

The following crops can be planted after:

In areas where pH is less than 7.5

- 9 months after an application: barley, cereal rye, chickpeas, faba beans, field peas, lupins, medics, oats, canola, safflower, subterranean clover, triticale, wheat.

In areas where pH is greater than 7.5

- 9 months after an application: barley, cereal rye, oats, triticale, wheat.
- 14 months after an application: cotton, maize, sorghum, soybeans, sunflowers. Where residual herbicides are applied following an application of Igran plus Logran/ triasulfuron WG, the crop rotational guidelines for these products must be followed.
- 22 months after an application: chickpeas, faba beans, field peas, lupins, medics, canola, safflower, subterranean clover. For all other crops advice should be sought from Nufarm.

Tralkoxydim

Group A Herbicide

(Reference label: Achieve® WG Herbicide APVMA Approval No: 46159/104094)

Plant-back periods

DO NOT plant sorghum, maize or rice for a period of 4 weeks after application of Achieve WG.

Tri-allate

Group J Herbicide

(Reference label: Avadex® Xtra Herbicide APVMA Approval No: 56598/55835)

Soil persistence and following crops

Under prolonged and extremely dry conditions Avadex® Xtra may persist for several months. Damage to field oats and sorghum may occur.

Tri-allate + prosulfocarb

(See prosulfocarb + tri-allate)

Tri-allate + trifluralin

Group J + D Herbicide

(Reference label: Imtrade Jetti Duo® Herbicide APVMA Approval No: 68009/110506)

Soil persistence and following crops

Under prolonged and extremely dry conditions Imtrade Jetti Duo herbicide may persist for several months.

Protection of crop, native and other non-target plants

DO NOT plant sensitive grasses such as oats, sorghum, millets, phalaris spp., ryegrass or wheat for 12 months following the use of this product except where Wheat follows Wheat or other winter crops.

DO NOT plant oilseed poppies when a detectable residue of Imtrade Jetti Duo herbicide is present in the soil. Levels as low as 0.02ppm may interact with other unfavourable factors such as moisture, stress, disease etc., to reduce poppy growth and vigour.

Triasulfuron

Group B Herbicide

(Reference label: Titan Triasulfuron 750 WG Herbicide APVMA Approval No: 61523/0207)

Crop rotation guidelines (pre-emergent application)

Where the product is applied at the rate of 30-35g/ha:

Unless otherwise specified (see table below) wheat, barley, oats, triticale and cereal rye can be planted the following season without restrictions.

For other specified crops Titan Triasulfuron 750 WG Herbicide treated area may be replanted after the interval indicated in the table below. These recommendations are made on the assumption that Titan Triasulfuron 750 WG Herbicide is applied to a wheat crop that reaches maturity in the season of application.

Soil pH (1:5 Soil: Water Suspension Method)	State	Replanting Interval	Minimum Rainfall Requirements between application and sowing the following crop	Crop
6.5 or less	QLD, NSW, VIC, SA, WA only	12 months	300mm	Field peas, Linseed, Lucerne, Lupins, Medics**, Subterranean clover**, Faba beans, Chickpeas and Canola
	QLD, NSW only	15 months	700mm	Sorghum, Maize, Soybean, Cotton, Cowpea and Mungbean
		18 months	900mm	Sunflowers
6.6 to 7.5	QLD, NSW only	12 months	500mm	Chickpeas and Canola
		15 months	700mm	Sorghum, Maize, Soybean, Cotton, Cowpea and Mungbean
		18 months	900mm	Sunflowers
	VIC, SA, WA only	22 months	500mm	Field peas, Linseed, Lucerne, Lupins, Medics**, Subterranean clover**, Faba beans, Chickpeas, Canola, Sorghum, Maize, Soybean and Cotton
7.6 and 8.5	VIC, SA only	12 months	250mm	Barley, Oats, Cereal rye for grain crops
			300mm	Barley, Oats, Cereal rye for hay crops
	QLD, NSW only	12 months	500mm	Chickpeas and Canola
		18 months	700mm	Sorghum, Maize, Soybean, Cotton, Cowpea and Mungbean
	VIC, SA, WA only	24 months	700mm	Field peas, Linseed, Lucerne, Lupins, Medics**, Subterranean clover**, Faba beans, Chickpeas, Canola, Sorghum, Maize, Soybean and Cotton
8.6 and above	VIC, SA only	12 months	250mm	Barley, Oats, Cereal rye for grain crops
			300mm	Barley, Oats, Cereal rye for hay crops
	QLD, NSW, VIC, SA, WA only	24 months	700mm	Field peas, Linseed, Lucerne, Lupins, Medics**, Subterranean clover**, Faba beans, Chickpeas, Canola, Sorghum, Maize, Soybean and Cotton

** Includes natural regeneration of subterranean clover and medics.

For all other crops seek advice from Titan Ag Pty Ltd.

Where the product is applied at 10-15g/ha plus 0.83L/ha of Titan Trifluralin 480 Herbicide.

Where the pH is less than 7.5 the following crops can be replanted from 9 months after application providing 300mm of rainfall has been recorded; field peas, canola, chickpeas, medics, clover, lucerne, safflower, lupins, cereal rye, barley, oats, wheat, triticale.

Where rainfall is less than 300mm for this period further advice should be sought from Titan Ag Pty Ltd.

Where pH is above 7.5 the following crops can be replanted 9 months after the application of Titan Triasulfuron 750 WG Herbicide – cereal rye, wheat, oats, barley, triticale.

Where the pH is above 7.5 the following crops can be replanted 12 months after application providing 350 mm of rainfall has been recorded: Field peas, canola, chickpeas, medics, clover, lucerne, safflower, lupins.

Where less than 350mm of rain has fallen between application and sowing of the crop further advice should be sought from Titan Ag Pty Ltd.

Crop rotation guidelines (post-emergent application)

Soil pH (1:5 Soil: Water Suspension Method)	State	Replanting Interval	Crop
6.5 or less	NSW, VIC, SA, WA only	7 months	Field peas, Linseed, Lucerne, Lupins, Medics**, Subterranean clover**, Faba beans, Chickpeas and Canola
		14 months	Sorghum, Maize, Soybean and Cotton
6.6 to 8.0	NSW, VIC, SA, WA only	20 months	Chickpeas, Canola, Sorghum, Maize, Soybean, Cotton, Field peas, Linseed, Lucerne, Medics**, Subterranean clover**, Faba beans

** Includes natural regeneration of Subterranean clover and Medics.

For all other crops a replanting interval of 24 months has to be observed.

These recommendations are made on the assumption that Titan Triasulfuron 750 WG Herbicide is applied to a wheat crop that reaches maturity in the season of application. Where Titan Triasulfuron 750 WG Herbicide is used on soil types with pH greater than 8 (1:5 soil: water suspension method), further advice should be sought from Titan Ag Pty Ltd regarding crop rotation guidelines, except for barley, cereal rye, oats, triticale and wheat.

Crop rotation guidelines

(Tank mixture of Titan Triasulfuron 750 WG Herbicide and Terbutryn)

The following crops can be planted after an application of Titan Triasulfuron 750 WG Herbicide and Terbutryn.

In areas where pH is less than 7.5 - 9 months after an application: barley, cereal rye, chickpeas, faba beans, field peas, lupins, medics, oats, canola, safflower, subterranean clover, triticale, wheat.

In areas where pH is greater than 7.5 - 9 months after an application: barley, cereal rye, oats, triticale, wheat.

14 months after an application: cotton, maize, sorghum, soybeans, sunflowers. Where residual herbicides are applied following an application, the crop rotational guidelines for these products must be followed.

22 months after an application: chickpeas, faba beans, field peas, lupins, medics, canola, safflower, subterranean clover.

Triclopyr

Group I Herbicide

(Reference label: Garlon® FallowMaster® Herbicide APVMA Approval No: 64746/53709)

Minimum re-cropping periods

Before using Garlon FallowMaster in tank mixes with other herbicides, check the plant-back information on all product labels. The time between spraying and planting will be determined by the product with the longest plant-back period.

Observe the following re-cropping periods for Garlon FallowMaster:

- wheat, barley, sorghum, maize 7 days
- chickpeas, soybeans, sunflowers 7 days
- cotton 14 days

Protection of crops, native and other non-target plants

Crops susceptible to Garlon FallowMaster include, but are not limited to: peas, lupins, lucerne, navy beans, soybeans and other legumes; cotton, fruit, hops, ornamentals, shade trees and *Pinus* spp., potatoes, safflower, sugar beet, sunflower, tobacco, tomatoes, vegetables and vines.

Garlon FallowMaster is damaging to susceptible crops during both growing and dormant periods. Grasses are normally unaffected and establish quickly after treatment.

Triclopyr + picloram

(See picloram + triclopyr)

Triclopyr + picloram + aminopyralid

(See picloram + aminopyralid + triclopyr)

Trifluralin

Group D Herbicide

(Reference label: Nufarm TriflurX® Selective Herbicide APVMA Approval No: 56421/1109)

Protection of crop, native and other non-target plants

DO NOT exceed rates specified, to avoid crop damage.

DO NOT plant sensitive grasses such as oats, sorghum, millets, phalaris spp., ryegrass or wheat for 12 months following the use of this product except where wheat follows wheat or other winter crops.

DO NOT plant oilseed poppies when a detectable residue of trifluralin is present in the soil. Levels as low as 0.02ppm may interact with other unfavourable factors (moisture, stress, disease etc.) to reduce poppy growth and vigour.

Trifluralin + prosulfocarb

Group **D + J** Herbicide

(Reference label: Imtrade Bolta Duo® Herbicide APVMA Approval No: 84061/109606)

Protection of crops, native and other non-target plants

DO NOT plant sensitive grasses such as oats, sorghum, millets, phalaris spp., ryegrass or wheat for 12 months following the use of this product except where wheat follows wheat or other winter crops.

DO NOT plant oilseed poppies when a detectable residue of Imtrade Bolta Duo herbicide is present in the soil. Levels as low as 0.02ppm trifluralin may interact with other unfavourable factors (moisture, stress, disease etc.) to reduce poppy growth and vigour.

