The specialists’ guide to better pasture
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MORE PROFITABLE PASTURE

This guide has been designed to help all pasture growers increase the productivity of their paddocks, and achieve the highest possible return on their investment.

If you’ve spent money on sowing and spreading fertiliser, you don’t want to end up just growing bigger weeds.

Growing the most productive and profitable pasture depends on a combination of adding the right nutrients and eliminating threats – from weeds and insects – as cost-effectively as possible.

The following pages outline a proven agronomic approach to pasture management and the principles that apply to all pasture protection.

The second half of the guide summarises some of the trial results that underpin the application recommendations for Bayer pasture protection products.
PASTURE ESTABLISHMENT

Turning run-down paddocks into dynamic pastures.

Pastures are dynamic biological environments which have a major impact on the productivity of grazing animals and future crops in rotation.

In grazing situations, adequate nutrient intakes are dependent on the availability (yield) and quality (nutrient composition) of pastures.

In cropping rotations, maximising the benefits of pastures to future crops relies on maintaining a quality legume-based pasture free of weeds.

New techniques enable graziers to manipulate and take advantage of pasture dynamics to reduce weed infestations and, at the same time, improve farm productivity and profitability.

Planning is the key

High-quality, weed-free pastures don’t appear overnight. They require careful thought, hard work and dedication. Especially important are:

- early (pre-sowing) planning;
- an ongoing commitment to weed, pest and pasture monitoring; and
- a preparedness to take effective action aimed at ensuring pastures not only thrive but set seed for the following seasons.

This enables the pasture to start off in top shape, and it can also be maintained by regular improvement.

THE TIMETABLE FOR TOP PASTURES

1st YEAR

(Year before sowing)

‘Spray topping’ and intensive grazing management to control the seed-set of annual weeds.

Spray topping

Grazing

2nd YEAR

Use of a knockdown herbicide, or cultivation, sowing improved pasture species with protective seed treatment, grazing and keeping on top of weed emergence.

Knockdown

Sowing

Grazing

Monitoring

Ongoing weed control

3rd YEAR

Careful monitoring and spraying out of weed re-infestations, and grazing.

Monitoring

Ongoing weed control

Grazing
PASTURE MAINTENANCE

Pasture manipulation

Newly established pastures begin to decline soon after sowing as weeds progressively re-invade the sward, reducing its productivity.

By controlling problem grass and broadleaf weeds, Bayer CropScience post-emergent herbicides can play an invaluable role in providing desirable pasture species such as clovers with a competitive advantage. This allows pasture to grow above the weeds, leading to an improved botanical composition. This process is termed ‘pasture manipulation’.

The aim of pasture manipulation is to increase and maintain the quantity of useful pasture species like clovers and key pasture grasses at the expense of weeds.

Pasture manipulation doesn’t necessarily mean weeds need to be killed. Effective shifts in pasture quality and composition can often be managed simply by suppressing weed growth.

The interpretation of “suppression” varies but generally means either:

• only a portion of treated weeds will be controlled (60–90% kill);
• the level of the control is variable; or
• severe stunting of the weed growth and/or defoliation will occur – allowing desirable species to out-compete them.

In a dynamic pasture environment, the removal of one species or component will result in an increase in the remaining components.

Pasture inventory

In order to get value out of weed control in established pasture, you need to make sure there are desirable pasture species present to fill the gaps left by weed removal.

Looked at another way, if the overall quality of the pasture is low (in terms of species composition), the removal of weeds will be of little or no benefit and only result in a reduction in dry matter production.

It makes sense, therefore, to conduct a ‘pasture inventory check’ or ‘stocktake’ before embarking on a weed control program. Make sure sufficient numbers of desirable pasture species are in place and ready to take over as soon as the weeds collapse or are suppressed.

A soil pH and fertility assessment will also show whether the pasture species present are likely to thrive once weeds are removed.

An obvious lack of desirable pasture species signals the need to either re-sow or oversow in order to establish a sound base from which to develop a thriving pasture.

As always, ‘earliness’ is the key to success. Pasture manipulation programs early in the season aimed at tackling young weeds will not only provide the best weed control but also the quickest recovery of the pasture.

Remember, weed control should only ever be seen as being part of a total management package. Whether herbicides are used or not, pasture species will most easily and readily compete with weeds if they themselves are growing vigorously. For these reasons, graziers need to consider all the other ‘control’ or ‘manipulation’ options at their disposal including:

• fertiliser use;
• introducing new, more productive pasture species or varieties;
• irrigation (where water is available);
• changes to grazing management;
• liming of acidic soils.
PASTURE THREATS

GRASS & BROADLEAF WEEDS

- Harbour disease and insect pests
- Nuisance to stock
- Unpalatable
- Compete with pasture species
- Reduce pasture quality

Grass species:

**Barley grass**
*Hordeum leporinum*
- Provides good early feed
- Seed heads damaging
- Adapted to heavy grazing
- No long-term dormancy

**Wild oats**
*Avena fatua*
- Tall, competitive in cereal crops
- Copious seed producer
- Dormancy can last 9 years

**Annual ryegrass**
*Lolium rigidum*
- Usually a weed of cropping areas
- Palatable to stock
- Very competitive
- Some dormancy
- Very prone to resistance
- Annual ryegrass toxicity

**Brome grass**
*Bromus diandrus, Bromus rubens*
- Prefers lighter, high pH soil types
- Extremely competitive
- Little to no dormancy
- Seed heads damaging

**Shepherd’s purse**
*Capsella bursa-pastoris*
- Common on roadsides
- Thrives on saline soil

**Dock**
*Rumex crispus*
- Perennial with a deep tap root
- Flourishes where drainage is poor
- Forms large infestations
- Can enormously reduce grazing capacity

**Wild radish**
*Raphanus raphanistrum*
- Competes strongly with young pasture
- Toxic to stock
- Exceptional dormancy and longevity

**Wild turnip**
*Brassica tournefortii*
- Aggressive and widespread
- Germinates mainly in autumn and spring
- May germinate in summer with ample moisture

**Doublegee**
*Emex australis*
- Contaminates wool
- Can cause stock lameness

Broadleaf species:

**Capeweed**
*Arctotheca calendula*
- Palatable, but low in nutritional value
- Can cause nitrate poisoning
- Dies off to create bare patches
- Undergrazing may encourage growth

**Variegated thistle**
*Silybum marianum*
- Usually germinates in autumn
- Can be poisonous
- Contaminates wool
- Heavy grazing can reduce seedlings

**Stemless thistle**
*Onopordum acaulon*
- Unpalatable except when wilted
- Can cause liver and kidney damage
- Spreads over large areas
- Shades out productive species

**Saffron thistle**
*Carthamus lanatus*
- Rarely eaten
- Spines contaminate wool
- Hinders stock movement
- Can prevent lucerne hay-making
PASTURE THREATS

PESTS

- Reduce pasture establishment
- Compete with beneficials
- Nuisance to stock
- Transmit disease
- Reduce pasture volume, quality and palatability

**Redlegged earth mite**  
*(Halotydeus destructor)*

- Present in all Australian winter rainfall areas
- Lacerates leaf surface and sucks out nutrients
- More damaging to clovers than grasses
- Particularly destructive of clover seedlings

**蓝草螨**  
*(Penthaleus major)*

- More widespread than previously thought
- 2–3 species right across southern states
- Prefers grass to clover

**Lucerne flea**  
*(Sminthurus viridis)*

- Mainly confined to southern Australia
- Attacks both lucerne and clovers
- Chews the leaf tissue and leaves the ‘skeleton’

**蓝绿蚜**  
*(Acyrthosiphon kondoi)*

- Active in autumn and spring
- Spread by wind
- Feeds on plant growing points
- Causes leaf curling, yellowing and stunting

**Cowpea aphid**  
*(Aphis craccivora)*

- Colonises growing tips of plants
- Heavy infestations deform the leaves and growing points
- Can be an important virus factor

**斑点白花寄生虫**  
*(Biotype of therioaphis trifoli)*

- Found predominantly in WA and NSW
- Tends to be found in clover pastures
- Particularly damaging on stressed clover pasture in autumn

**Bryobia mite**  
*(Bryobia repensi)*

- Mainly found in Northern NSW, southern Queensland and Western Australia
- Active in late spring, summer and autumn

**Snails and slugs**

- Very widespread
- Able to survive throughout summer
- Much more voracious than other common pasture pests

**Pest control**

The key to effective pest control is breaking down the breeding cycle of each pest population rather than just knocking down the active adults at any one time.

Analysis of life cycles helps identify the critical timing for pesticide applications and avoid dormant populations re-emerging.

In spring, for instance, redlegged earth mites produce eggs that survive the harsh summer conditions and then hatch the following autumn. If the mites are killed prior to producing these over-summer eggs, there is much less likely to be a significant mite population in the following season.
Selective Grass Herbicides

**GROUP A HERBICIDE**
- Extremely effective on grasses (>99% control)
- Includes products like Correct®, Sertin®, Select® and Targa®
- Both ‘fops’ and ‘dims’ are in Group A:
  - ‘fops’ are predominantly better on barley grass and wild oats
  - ‘dims’ are better on ryegrass
- Resistance to Group A herbicides is common in all cropping areas

Other herbicide groups

**GROUP B HERBICIDE**
ALS inhibitors Atlantis®, Hussar®

**GROUP C HERBICIDE**
Triazines, diuron

**GROUP F HERBICIDE**
Jaguar®, Tigrex®,

**GROUP L HERBICIDE**
Gramoxone®, Sprayseed®

**GROUP M HERBICIDE**
Glyphosate

Group A – highest resistance risk
Group M – lowest resistance risk

**S.T.A.R. program**
The S.T.A.R. program is a simple set of guidelines designed to optimise herbicide results, and to minimise failures. The basic principles apply to all herbicides. While it is impossible in any dynamic and changing biological system to guarantee anything, following the S.T.A.R. program can reduce the risk of herbicide failure. The program’s aim is to promote understanding and management of the four major factors which influence herbicide effectiveness.

**STRESS CAN LOWER A HERBICIDE’S EFFECTIVENESS AND CROP SAFETY**

**Before using chemicals, ask:**
- Is the soil waterlogged?
- When did it last rain?
- Are there insect pests present?
- Have there been frosts?
- Are nutrients sufficient?

**TIMING EARLY SPRAYING RETURNS GREATER YIELDS**

**Spraying at the optimum time:**
- Gives greater effectiveness
- Minimises weed competition
- Maximises yield
- Helps obtain better spray penetration and coverage
- Reduces the herbicide cost in many cases

**APPLICATION CORRECT APPLICATION ENSURES OPTIMUM RESULTS**

**Aim for maximum coverage:**
- Follow directions on water volume, and spraying speed
- Spray when weeds are young
- Don’t mix products which are not recommended

**RATE CUTTING RATES DOES NOT SAVE MONEY**

**Using recommended rates:**
- Gives maximum effectiveness and consistency
- Increases the speed of weed control
- Helps overcome possible unknown stress, timing or application problems
- Maximises yield response

**STRESS**

**EARLY SPRAYING RETURNS GREATER YIELDS**

**A PPLICATION**

**R AT E**

**BAYER PASTURE PROTECTION PRODUCTS: USE**

Early spraying is essential

The aim of using any post-emergent herbicide is to control weeds in the pasture early, before they have the chance to reduce productivity, allowing the maximum time for clover, pasture grasses and lucerne to recover to dominate the sward.

Late weed control means that most of the damage is already done, so it is both less effective and more expensive.

Important pasture weeds like capeweed come up in the first flush, so these can be controlled while they are tiny, providing better weed control at a lower application rate and cost.

At the time of spraying, clover and lucerne plants should have 3-trifoliate leaves. There is likely to be a fair component of bare ground.

**DO NOT WAIT UNTIL THE CANOPY IS CLOSED.**

**ALSO REMEMBER:**

When using herbicides to control pasture weeds, pastures should be destocked before they are sprayed and only restocked after the withholding period (WHP) has elapsed.

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**ALSO REMEMBER:**

When using herbicides to control pasture weeds, pastures should be destocked before they are sprayed and only restocked after the withholding period (WHP) has elapsed.
**With its cost-effective knockdown control of many common broadleaf weeds, Tigrex is well established as a key pasture protection solution.**

**Group II Herbicide**

**Key compatibilities**

Clover, sub-clover & grass species: Targa®, Fusilade®, simazine

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**CASE STUDY: Transforming pasture quality**

A replicated trial conducted at Casterton in western Victoria in 1994 provided a dramatic demonstration of the ability of Tigrex to transform pastures.

Tigrex was applied to 4–6 leaf capeweed at both 0.75 L/ha and 1.0 L/ha. The two rates provided 92.5% and 93.75% control respectively. The paddock was restocked two weeks after spraying to help with control of larger weeds.

The paddock in which the trial was conducted had last been renovated in the 1940s, but contained sufficient remaining clovers to produce a staggering transformation once the weed burden was eliminated.

While the untreated area produced 1.72 t/ha dry matter, Tigrex at 750 mL/ha produced 1.95 t/ha and Tigrex at 1 L/ha produced 2.19 t/ha.

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**Analysis showed that the increase in clover content as well as dry matter yield gave the livestock more than 10% extra metabolisable energy in their feed.**

This sort of increase in dry matter production and feed quality can’t be expected in every case, since the extent of the change very much depends on the type of weeds present and the quality of the pasture.

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**Questions & answers**

Can Tigrex be applied before the third trifoliate leaf stage in clover?

Yes. However, applying Tigrex prior to the third trifoliate leaf stage may result in crop damage, especially under stressed conditions and in sandy soils.

Is it possible to graze the pasture immediately after spraying Tigrex?

No. There is a 7-day WHP for grazing. Care also needs to be taken to prevent nitrate poisoning in stock where there is a significant volume of broadleaf weeds to be grazed after spraying. Ensure that stock have not been grazing dry pasture or feed before entering a sprayed paddock.

Will Tigrex control capeweed?

Yes. Tigrex will control capeweed up to the 4-leaf stage and not more than 120 mm in diameter.

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**Crop tolerance**

Some pasture grasses, including phalaris and cocksfoot, may show some initial reduction in vegetative growth after application of Tigrex. Care should be exercised if sensitive clover varieties (such as rose or strawberry clover) or grasses are included in the pasture sward. Consult your Bayer CropScience representative for advice on specific varieties.
Registered for the control of a large range of broadleaf weeds, Jaguar is one of the most versatile herbicides on the market. Early application provides very cost-effective protection of seedling or established lucerne, and Jaguar can also be used on lucerne or lucerne/clover mixtures undersown in cereal crops.

**Key compatibilities**

<table>
<thead>
<tr>
<th>Established lucerne:</th>
<th>Simazine Simazine/paraquat mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newly sown &amp; established lucerne, clover &amp; grasses:</td>
<td>Targa, Fusilade, 2,4-DB amine Broadstrike®</td>
</tr>
</tbody>
</table>

**TIMING**

As early as possible between the 3 and 8-trifoliate leaf stages of the pasture

**CROP REGISTRATIONS**

Clover and/or lucerne-based pasture. Wheat, barley, triticale & cereal rye undersown with clover and/or lucerne

**GROUND APPLICATION**

Water volume: At least 50 L/ha
Droplet density: 40-60 per square cm

**AERIAL APPLICATION**

Jaguar is not registered for application by air.

**RAINFAST**

4 hours

**SHELF-LIFE**

>2 years

**GROUP C F** HERBICIDE

**Key weeds controlled**

- Amsinckia
- ball mustard, canola (rapeseed), capeweed, chamomile, charlock, chickweed, cleavers, climbing buckwheat, common cotula (bird’s eye), common peppergrass, common sowthistle (milk thistle), corn gromwell, crassula (stonecrop), deadnettle, dense-flower fumitory, dock, doublegee (spiny emex), fat hen, field madder, fireweed, Heslham scent (King Island melilot), horehound, lesser sweencees, long storkbill, marshmallow, Mexican poppy, mintweed, mouse-eared chickweed, New Zealand spinach, ox-tongue, Paterson’s curse (Salvation Jane), pheasant’s eye (adonis), prickly lettuce, purple calandrinia (mountain sorrel), rough poppy, saffron thistle, scarlet pimpernel, shepherd’s purse, skeleton weed, sorrel, speedwell, spoon cudweed, three-horned bedstraw, toad rush, tree hogweed, turnip weed, variegated thistle, vetch, volunteer field peas, volunteer lupins, ward’s weed, wild mustard, wild radish, wild turnip, wireweed.

**CASE STUDY:**

The enormous return on investment provided by early weed control in established lucerne was demonstrated in replicated trials conducted in the Riverina and Clare Valley during 1994. Jaguar and Jaguar + simazine mixtures were tested at different rates on different weeds at the two locations and showed a consistent yield benefit.

At Woomargama they were applied to established Southern Special Lucerne for the control of 1–4 leaf shepherd’s purse.

The Marrabel trial site contained infestations of 2–4 leaf Salvation Jane (Paterson’s curse) and 2–4 leaf capeweed.

Both Jaguar rates and the mixture with simazine more than doubled yield in the South Australian trial, and the increases averaged out at over 50% in the New South Wales trial. In all cases there was an excellent return on investment.

**Woomargama, NSW, 1994**

<table>
<thead>
<tr>
<th>Un treated</th>
<th>Jaguar 500 mL/ha</th>
<th>Jaguar 700 mL/ha</th>
<th>Jaguar 500 mL/ha + simazine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lucerne yield 0.1 ha</td>
<td>2.0</td>
<td>4.0</td>
<td>5.0</td>
</tr>
</tbody>
</table>

**Marrabel, SA, 1994**

<table>
<thead>
<tr>
<th>Un treated</th>
<th>Jaguar 500 mL/ha</th>
<th>Jaguar 700 mL/ha</th>
<th>Jaguar 500 mL/ha + simazine</th>
</tr>
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<tbody>
<tr>
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<td>2.0</td>
<td>4.0</td>
<td>5.0</td>
</tr>
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</table>

**Can Jaguar be applied prior to the third trifoliate leaf stage?**

Yes. Application can be made from the first trifoliate leaf stage in Qld, NSW, ACT and Vic only. In other states, applications prior to the third trifoliate leaf stage may result in crop damage if seedlings are under stress in sandy soils.

**Can Jaguar be applied to annual medics?**

No. Do not apply Jaguar to annual medics.

**Does temperature influence the activity of Jaguar in pasture?**

Do not apply Jaguar if frosts are imminent. Frost causes stress on crops and weeds and could result in increased crop effects and/or decreased weed control. To ensure good results, Jaguar should only be applied once the weeds and crop are no longer under stress from frost conditions. Avoid application when maximum daily temperatures above 20ºC occur, or are likely to occur within a few days of application, as increased crop damage may result.

**Questions & answers**

Q

Woomargama, NSW, 1994

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**CASE STUDY:**

The value of increased lucerne herbage

Trial locations:

- Woomargama, NSW
- Marrabel, SA
Correct provides very effective control of key grassweeds in legume pastures as well as lucerne. Rapidly absorbed by the target plants, Correct is rainfast within one hour of application.

**GROUP A HERBICIDE**

**Key compatibilities**

| Legume, pastures & lucerne: | Compatible with most commonly used herbicides from direct drilling and minimum tillage to pasture topping. |

Correct must always be applied with an adjuvant. Check the label for details.

**CASE STUDY:**

Weed control improves protein and digestibility

At Walla Walla in NSW, a trial designed to compare the effectiveness of two similar Correct formulations in controlling weeds highlighted an important additional benefit: a substantial increase in pasture quality.

Correct applied at 200 mL/ha, mixed with a mineral oil at 0.5% v/v, was applied to pasture that had been moderately grazed prior to spraying and was then rested for recovery of growth. The pasture’s mixed grassweed infestation was dominated by brome grass and annual ryegrass.

The pasture was grazed again approximately 6 weeks after spraying.

As well as producing exceptional levels of control (99.5% control of annual ryegrass and 100% control of brome grass), the single application of Correct improved protein levels, digestibility and metabolisable energy.

As these tables show, a second trial at Naracoorte in South Australia produced similar findings, confirming that the weed control of Correct provides value-added benefits.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Annual ryegrass</th>
<th>Soft brome</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No./m² % control</td>
<td>No./m² % control</td>
</tr>
<tr>
<td>Untreated</td>
<td>290 0</td>
<td>262 0</td>
</tr>
<tr>
<td>Correct*</td>
<td>0.1 99.5</td>
<td>0 100</td>
</tr>
</tbody>
</table>

**Treatment**

- Correct
- Untreated

**Analysis**

<table>
<thead>
<tr>
<th></th>
<th>Walla Walla Correct</th>
<th>Naracoorte Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude protein</td>
<td>8.7</td>
<td>12.1</td>
</tr>
<tr>
<td>Digestibility</td>
<td>50</td>
<td>54.0</td>
</tr>
<tr>
<td>Metabolisable energy</td>
<td>7.0</td>
<td>7.6</td>
</tr>
</tbody>
</table>

Trial references: JES 579, SCM 286

**Questions & answers**

**Should I use an adjuvant with Correct?**

Yes, BS 1000® at 0.2% (200 mL/100 L) is always recommended for use with Correct.

**I need to spray today, but rain is forecast for this afternoon. Will Correct still work if it rains?**

Laboratory and field tests have shown that Correct is taken up so quickly by the target weeds that it should remain just as effective even if rain starts falling an hour after application.

**I have applied Correct to my legume pasture and want to put stock on the paddock. How long should I wait?**

After 3 days it is fine to reintroduce stock to pastures treated with Correct. However, heavy grazing after application can reduce the effectiveness of Correct. So in a densely stocked pasture situation, you need to wait for 7 days before returning stock to the paddock.
Trials have shown that seed treated with Gaucho produces a much higher proportion of established seedlings than untreated seed – at least double in the Warrnambool trial summarised in this graph.

**CASE STUDY:**
Improved pasture establishment

Warrnambool IMI183

The results summarised in this table, first presented in the November 2002 edition of *Farming Ahead* magazine (No. 131), show the positive benefits of increasing the number of lucerne plants per square metre. Gaucho seed treatment can significantly improve lucerne seedling density with a positive effect on overall production.

### The effect of plant density on biomass & nitrogen fixation

<table>
<thead>
<tr>
<th>Lucerne density (per m²)</th>
<th>Shoot dry matter production (t/ha/yr)</th>
<th>Nitrogen fixed (kg/ha/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;10 plants/m²</td>
<td>3.30</td>
<td>54</td>
</tr>
<tr>
<td>8-10 plants/m²</td>
<td>2.94</td>
<td>40</td>
</tr>
<tr>
<td>5-7 plants/m²</td>
<td>1.78</td>
<td>29</td>
</tr>
<tr>
<td>&lt; 5 plants/m²</td>
<td>1.25</td>
<td>17</td>
</tr>
</tbody>
</table>

Source: CSIRO Plant Industry

### Questions & answers

**Do I need to control RLEM and BOM the year before I sow?**

A well-timed spring spray with Le-mat will help reduce the mite population and aid in the efficacy of Gaucho.

**How do I find information on timing of spring sprays to ensure I get the most value from Gaucho?**

The date to target spring spraying is the same each year and can be obtained by contacting Timerite® (a CSIRO and Australian Wool Limited initiative). Phone 1800 070 099 or visit www.timerite.com.au

**What will Gaucho do to improve pasture production?**

Gaucho will improve seedling establishment, resulting in more healthy plants per square metre. More plants will mean more production and a better return on investment.

### Application Summary

Gaucho should be used in conjunction with Timerite as part of an integrated approach to mite control. The four main steps are:

1. A well timed spring spray with Le-mat® 290 SL Insecticide to lower adult mite numbers (reducing over-summering eggs).
2. Use Gaucho as a seed treatment to manage earth mite populations in establishing pastures.
3. A perimeter spray of Le-mat around the newly sown paddock to prevent earth mite invasions from neighbouring paddocks.
4. Monitor crops for re-invasion and if necessary apply Le-mat to lower mite numbers.

### Residual Pest Control

Up to 4 weeks when used as part of an integrated approach to mite control.

### Key Pests Controlled

- Redlegged earth mite
- Blue oat mite
Research by Bayer CropScience in co-operation with the Charles Sturt University (CSU) at Wagga Wagga and many additional trials have clearly shown that using Le-mat to control pasture pests can result in substantial benefits to pastures.

Analysis of the clover component of trial strips at CSU was undertaken by the Pastoral Research Institute, Hamilton, Victoria. It shows improved digestibility and palatability in the sprayed strip that can be directly translated into increased intake and improved livestock performance:

**Digestibility (%)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Digestibility (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsprayed</td>
<td>57</td>
</tr>
<tr>
<td>Le-mat sprayed</td>
<td>69</td>
</tr>
</tbody>
</table>

**Metabolisable energy (MJ/kg DM)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Metabolisable energy (MJ/kg DM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsprayed</td>
<td>7</td>
</tr>
<tr>
<td>Le-mat</td>
<td>10</td>
</tr>
</tbody>
</table>

Source: CSU, Wagga, 1990

In another replicated pasture trial (JES 487) at Walla Walla one spray was applied on 1st September to control earth mite and lucerne flea.

**Walla Walla, 1995**

<table>
<thead>
<tr>
<th>Type of analysis</th>
<th>Pasture treatment</th>
<th>Crude protein %</th>
<th>Digestibility %</th>
<th>Estimated metabolisable energy MJ/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unsprayed</td>
<td>24.1</td>
<td>71.3</td>
<td>10.1</td>
</tr>
<tr>
<td>Alphacypermethrin</td>
<td>24.7</td>
<td>72.2</td>
<td>10.3</td>
<td></td>
</tr>
<tr>
<td>Le-mat</td>
<td>26.1</td>
<td>75.0</td>
<td>10.8</td>
<td></td>
</tr>
<tr>
<td>LSD 0.05</td>
<td>1.099</td>
<td>11.754</td>
<td>0.307</td>
<td></td>
</tr>
</tbody>
</table>

In the CSU trial, the seed-set of pasture in the sprayed and unsprayed areas was measured. Protecting the flowers from earth mite attack significantly increased the quantity of seed-set and increased size of the seed. This has clear ramifications for increased pasture longevity.

**Key pests controlled**

- Redlegged earth mite
- Blue oat mite
- Lucerne flea
- Bryobia mite
- Blue-green aphid

**Questions & answers**

**Q** Does Le-mat control pests through contact or systemic activity?

Both. Le-mat controls both pests that have direct spray contact and those that ingest the chemical by feeding on plants that have been treated with Le-mat.

**Q** Will Le-mat control both redlegged earth mite and blue oat mite?

Yes, Le-mat is effective at controlling both types of earth mite. There is some research suggesting that certain species of blue oat mite are more tolerant to insecticides than others.

**Q** I plan to use Gaucho next year, so should I be using Le-mat this year?

Definitely. If you plan to use an insecticidal seed treatment such as Gaucho, either on pastures or crops in the following season, a well-timed spring spray with Le-mat will ensure that mite numbers are greatly reduced for sowing next autumn.

**Key compatibilities**

Le-mat is compatible with a wide range of herbicides.

**GROUP 1B INSECTICIDE**

Still the most outstanding option for many of the most common pasture pests. Provides rapid knockdown as well as residual protection for up to six weeks.
The performance of Mesurol was assessed on a 530 hectare mixed farming business at Padthaway in South Australia.

There is an acknowledged snail problem in the area and a preventative program is important for the protection of emerging crops as well as pasture. In this case, Mesurol and Meta® – a competitive product – were each spread at a rate of 8 kg/ha over half a paddock of canola at early emergence. (Note that this rate is higher than most pastures require.)

Grower Bradley McElroy and local Landmark agronomist Cameron Conboy monitored the performance of the two products. Both performed well, but the Mesurol was noticeably more effective.

“Both were effective on the big white Italian snails,” says Cameron, “but the Mesurol really knocked the other snails too – which was an excellent result. The Mesurol basically had more baits/m².

“As well, the Mesurol treatment had a much longer residual period. It seemed to remain effective for around 6 weeks longer than the Meta treatment – despite a very heavy drenching of rain during that period.”

Bradley McElroy also rated Mesurol highly: “I was really impressed with its performance, particularly its longer residual effect. Canola can be a bit tricky, so the fact that we could go in and bait early, and then be sure there was a long-lasting effect, is important and a key benefit.”

**CASE STUDY:**

**Long-lasting residual control**

**Trial location:** Padthaway, SA

Mesurol Snail and Slug Bait knocks out slugs and snails in all kinds of pasture as well as field crops and cereals. The blue bait is attractive to slugs and snails, and has a fast action with no recoveries. A single pellet of Mesurol can kill up to 30 snails.

**Other management strategies**

- Integrated control and management techniques are essential.
- Rolling and grazing of pasture can greatly reduce the number of over-summering sites.
- Large numbers of snails survive along fencelines. Establishment of fenceline fire breaks and the slashing and burning of roadside verges will further reduce the number of over-summering sites.

**APPLICATION SUMMARY**

Mesurol is easy to apply through a fertiliser spreader, combine drill or aircraft.

A 20–30 metre wide band of Mesurol applied around the fence line at sowing will act as a barrier to prevent snails and slugs invading new pasture.

To treat an existing infestation, Mesurol should be applied at an overall rate of 5.5 kg/ha. Higher rates may be needed for heavy infestations or when the pasture is tall or dense.

**Key pests controlled**

- Common garden snail
- White snail
- White Italian snail
- Slugs

**Questions & answers**

- **Will Mesurol control both slugs and snails?**
  - Yes. A common misconception about Mesurol is that it only controls snails. Mesurol successfully controls slugs along with several species of snails.

- **I want to use Mesurol, but I am not sure I have the correct equipment to apply it.**
  - A fertiliser spreader or even a combine seeder is fine for applying Mesurol. Both can be easily calibrated to deliver the correct dose to your paddocks.

- **Can I pile the Mesurol baits around my paddock to stop snails and slugs coming into the paddock?**
  - No, it is important not to heap the pellets. Ensure that pellets are spread evenly on the ground where the snails or slugs occur. Heaping does not increase the effectiveness of the pellets because each pellet acts as a baiting site.

**ALWAYS READ FULL DIRECTIONS FOR USE BEFORE APPLYING**
This management chart is a guide to the typical use patterns for Bayer CropScience pasture products. From seed treatments at planting right through to herbicides and insecticides for established pastures, the chart will enable you to look up approximate application timings for all protective pasture inputs. Since they are only approximate, please check the relevant labels before applying them.

**Pasture management and application timing chart**

This chart will repeat at different timings for spring-sown pastures.

<table>
<thead>
<tr>
<th>Growth stage</th>
<th>april</th>
<th>may</th>
<th>june</th>
<th>july</th>
<th>aug</th>
<th>sept</th>
<th>oct</th>
<th>nov</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sowing</td>
<td>Cotyledon</td>
<td>1st trifoliate</td>
<td>3rd trifoliate</td>
<td>5th trifoliate</td>
<td>8th trifoliate</td>
<td>Mid vegetative</td>
<td>Late vegetative</td>
<td>Early flowering</td>
</tr>
</tbody>
</table>

**Broadleaf weeds**

- **Tigrex**
- **MCPA**

**Grass weeds**

- **Jaguar**
- **Correct**

**Insect control and pest control**

- **Gaucho**
- **Le-mat**
- **Le-mat (TIMERITE)**

*TIMERITE® is the result of a CSIRO and Bayer co-operative project. The resultant model gives an optimal spray date in spring for the control of redlegged earth mites. Le-mat applied at the TIMERITE date will greatly reduce mite numbers next autumn.

*Tigrex®, Jaguar® and MCPA have different tolerances to different species of lucerne and clovers. Please refer to directions for use on product label before using any product.*
For more information on disease and pest management in pastures, contact your local specialist:

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