

Sheep Drenches

**Effective internal
parasite control
in sheep**



COOPERS

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Introduction

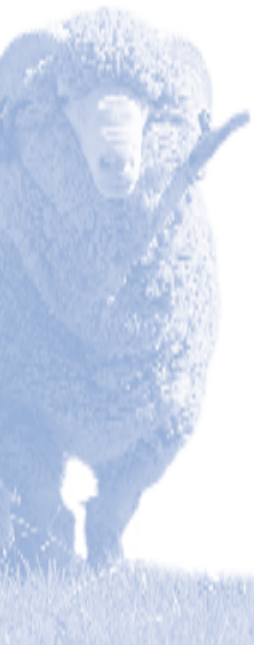


Internal parasite infestation is a major cause of production losses in sheep in Australia. Gastro-intestinal roundworms, lungworm and liver fluke are all considered to be economically important parasites to control. Roundworms in sheep cost Australian sheep producers more than any other disease. In 2006, a Meat and Livestock Australia Report estimated that internal parasites cost the Australian sheep industry \$369M in lost production and treatment costs annually.¹

Despite considerable research being conducted into developing integrated parasite control programs (e.g. grazing management strategies to minimise worm burdens and breeding parasite resistant sheep) to minimise the use of anthelmintics (drenches), farmers continue to rely heavily on anthelmintics for effective internal parasite control in sheep.

Coopers Animal Health has established themselves as a reputable company with emphasis on product quality and customer service over many years. Accordingly, Coopers has developed a diverse range of quality products for the control of internal parasites in sheep.

This information pack aims to help you identify the Coopers product which is most suitable for your needs.

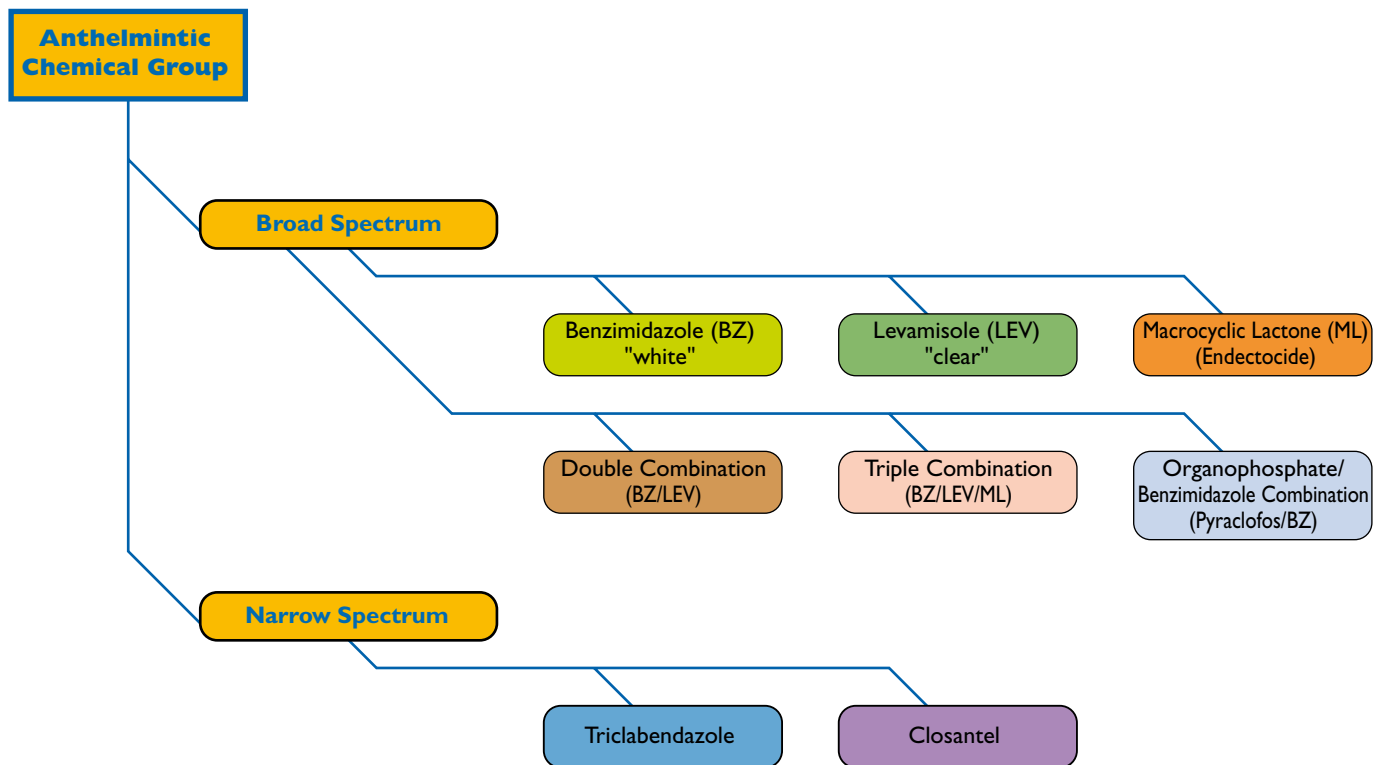




Anthelmintics – Which Chemical Group?



Anthelmintics available from Coopers Animal Health for control of internal parasites in sheep in Australia are classed as either 'Broad Spectrum' or 'Narrow Spectrum' as follows:



Broad Spectrum Anthelmintics

Broad spectrum drenches kill a wide range of susceptible internal parasites of sheep. They are:

Benzimidazole “white” Drenches

Benzimidazoles work by inhibiting the parasite's ability to absorb nutrients, which ultimately leads to the starvation of the parasite. Benzimidazoles are effective against gastro-intestinal roundworms, lungworm and tapeworm. Albendazole when used at a higher rate will aid in the control of adult liver fluke.

Coopers Product

Valbazen® (Albendazole)

Claim

Control of susceptible gastro-intestinal roundworms, lungworms, tapeworms and to aid in the control of adult liver fluke.

Panacur® 25 (Fenbendazole)

Control of benzimidazole sensitive roundworms and lungworm and to aid in control of tapeworm in sheep, goats and cattle.



Refer to the product summary and efficacy charts on page 14-16 for further information.



Levamisole “clear” Drenches

Levamisole based products will affect the transmission of nerve impulses in the worm resulting in paralysis and expulsion of the parasite. Levamisole based products are effective against gastro-intestinal roundworms and lungworm.

Coopers have combined Oxyclozanide with Levamisole in the product Nilzan LV to also provide control of adult liver fluke and to assist the removal of tapeworm segments in sheep and lambs.



Coopers Product

Nilverm® Oral and Nilverm LV

Nilzan® LV
(also contains Oxyclozanide)

Ripercol® Soluble Powder

Claim

Control of susceptible gastro-intestinal roundworms and lungworms in sheep and cattle.

Control of susceptible gastro-intestinal roundworms, lungworms and liver fluke in sheep and cattle. Assists in the removal of tapeworm segments in sheep and lambs.

Control of susceptible gastro-intestinal roundworms and lungworms in sheep.

Refer to the product summary and efficacy charts on page 14-16 for further information.

Macrocytic Lactone (Endectocides)

Macrocytic Lactone (ML) products control a range of internal (gastro-intestinal roundworms, lungworm) and external (itchmite, nasal bot) parasites in sheep when administered orally. Macrocytic Lactones inhibit the transmission of nerve impulses in the worm leading to paralysis and expulsion. Macrocytic Lactones are effective against adult and immature gastro-intestinal roundworms and lungworm. The Macrocytic Lactones have no activity against liver fluke or tapeworm.

Coopers Product

Paramax® Multi-Purpose Concentrate for Sheep (Ivermectin)

Claim

Oral treatment for control of susceptible gastro-intestinal roundworms, lungworms, nasal bots and itchmite in sheep*.



Refer to the product summary and efficacy charts on page 14-16 for further information.

* Can also be used for prevention and treatment of blowfly strike and treatment of lice by jetting in long woolled sheep (See product label).



Double Combination (Benzimidazole/Levamisole)

In an attempt to manage anthelmintic resistance, double combination drenches (mixtures of Benzimidazole and Levamisole based products) have become an important tool on many sheep properties. Where resistance to either of the Benzimidazole or Levamisole based compounds is present, the use of a combination drench is usually more effective.



Coopers Product

Scanda® Mineralised
(Levamisole, Oxfendazole, Selenium,
Cobalt and Zinc)

Claim

Control of gastro-intestinal roundworms, lungworms and tapeworms in sheep and lambs, including Macrocytic Lactone, Levamisole or Benzimidazole resistant strains susceptible to this product.

Supplements diets deficient in Selenium, Cobalt and Zinc.

Refer to the product summary and efficacy charts on page 14-16 for further information.



Triple Combination (Benzimidazole/Levamisole/Macrocylic Lactone)

Triple combination drenches are recognised as a very effective tool in delaying the onset of anthelmintic resistance. Scandamax™ is a combination pack which contains Scanda Mineralised and Paramax Multi-Purpose Concentrate for Sheep. When mixed as directed, Scandamax is a cost effective triple combination drench. Once mixed the triple combination drench is stable for up to 28 days.

Scandamax can be incorporated into a strategic drenching programme or used as a quarantine drench to help prevent the introduction of resistant strains of roundworms onto a property.

Coopers Product

Scandamax Oral Sheep Drench
Combination Pack

Claim

Control of gastro-intestinal nematodes in sheep and lambs (including macrocylic lactone, levamisole, morantel or benzimidazole resistant strains); nasal bot and itchmite in sheep. Supplements diets deficient in Selenium, Cobalt and Zinc.



Refer to the product summary and efficacy charts on page 14-16 for further information.

Ready-to-use Organophosphate/Benzimidazole Combination

Coopers Colleague® is a Ready-to-use Organophosphate/Benzimidazole combination drench containing pyraclofos and albendazole.

Organophosphate drenches have not been as widely used as other drenches on the market and as such are still effective in areas where the efficacy of other drenches may be limited. When combined with other drench groups, organophosphates provide even more effective broad spectrum worm control.

With increasing parasite resistance, there is the need for an effective anthelmintic that reduces the constant exposure of parasites to currently used anthelmintics that are effective. This reduction in exposure will prolong the efficacy of the various effective drench families.

Colleague is the ideal alternative combination drench to rotate to. There is no known resistance to pyraclofos ensuring Colleague will provide effective broad spectrum worm control, even against single or multi-resistant strains.

Coopers Product

Colleague

Claim

Control of sensitive gastro-intestinal roundworms (including strains that have single or multiple resistance to benzimidazole, levamisole, closantel and macrocyclic lactone drenches), large lungworms and tapeworm. Aids in the control of adult liver fluke and reduces the output of viable worm and fluke eggs.



Refer to the product summary and efficacy charts on page 14-16 for further information.

Narrow Spectrum Anthelmintics

Narrow spectrum drenches are only effective against one or two parasite species. They include:

Triclabendazole

Triclabendazole is a Benzimidazole compound that when administered on its own is effective against all three stages of liver fluke, including early immature, immature and adult liver fluke.

Coopers have developed Paramax F, a Macrocytic Lactone/Triclabendazole Combination, which is effective in the control of gastro-intestinal roundworms, lungworm plus liver fluke.

Coopers Product

Paramax F (Triclabendazole; also contains Ivermectin)

Claim

Control of susceptible early immature, immature and adult liver fluke in sheep
Control of susceptible gastro-intestinal roundworms, lungworms, nasal bots and itchmite in sheep.



Refer to the product summary and efficacy charts on page 14-16 for further information.



Closantel

Closantel based products when administered on their own (e.g. Seponver[®] Se) have a narrow spectrum of activity against blood sucking parasites (Barber's Pole Worm and liver fluke). Closantel based products provide sustained activity for up to 4 weeks against susceptible strains of Barber's Pole Worm and controls adult and immature liver fluke 6 weeks of age and older. Closantel also controls nasal bot.

Because of its high level of effectiveness and its sustained activity, Closantel has formed the basis of strategic drenching programs in areas of Australia where Barber's Pole Worm (*Haemonchus contortus*) has been a problem, greatly reducing the losses due to this parasite.

Closal[®] is a combination of Closantel with Albendazole that provides sustained activity against Barber's Pole Worm as well as controlling a broad spectrum of other internal parasites.



Coopers Product

Seponver Se (Closantel plus Selenium)

Closal (Closantel plus Albendazole)

Claim

Sustained control of Barber's Pole Worm and control of liver fluke and nasal bots in sheep. Aids in the control of Selenium responsive conditions.

Control of susceptible gastro-intestinal roundworms, lungworms, tapeworms, nasal bots and liver fluke in sheep. Reduces output of viable worm and fluke eggs. Sustained control of Barber's Pole Worm in sheep.

Refer to the product summary and efficacy charts on page 14-16 for further information.



Summary of Coopers Animal Health Product Range for Internal Parasite Control in Sheep

| Product | Active Ingredient | Dose Rate | Pack Size | Meat Withholding Period (Days) | Export Slaughter Interval (Days) |
|---|---|-----------------|------------------|--------------------------------|----------------------------------|
| Benzimidazole “white” | | | | | |
| Valbazen | Albendazole | 1 mL/5 kg LW* | 5 L, 25 L | 10 | 10 |
| Panacur 25 | Fenbendazole | 1 mL/5 kg LW | 1 L, 5 L | 14 | 14 |
| Levamisole “clear” | | | | | |
| Nilverm Oral | Levamisole | 2.5 mL/10 kg LW | 20 L | 3 | 7 |
| Nilverm LV | Levamisole | 1 mL/10 kg LW | 1 L, 10 L | 3 | 7 |
| Nilzan LV | Levamisole, Oxyclozanide | 1 mL/10 kg LW | 1 L, 2 L, 5 L | 14 | 14 |
| Ripercol Soluble Powder | Levamisole | 1 mL/5 kg LW | 187.5 g | 3 | 7 |
| Macrocyclic Lactone (Endectocides) | | | | | |
| Paramax Multi-Purpose Concentrate | Ivermectin | 2.5 mL/10 kg LW | 1 L (4 x 250 mL) | 14 | 21 |
| Double Combinations (Benzimidazole/Levamisole) | | | | | |
| Scanda Mineralised | Oxfendazole, Levamisole, Selenium, Cobalt, Zinc | 1 mL/10 kg LW | 10 L, 15 L | 10 | 14 |
| Triple Combinations (Benzimidazole/Levamisole/Macrocyclic Lactone) | | | | | |
| Scandamax | Oxfendazole, Levamisole, Ivermectin, Selenium, Cobalt, Zinc | 1 mL/9 kg LW | 9 L | 14 | 21 |
| Organophosphate/Benzimidazole Combination | | | | | |
| Colleague | Pyraclafos, Albendazole | 1 mL/5 kg LW | 5 L, 12 L | 14 | 35 |
| Macrocyclic Lactone/Triclabendazole Combination | | | | | |
| Paramax F | Ivermectin, Triclabendazole | 1 mL/5 kg LW | 5 L, 20 L, 25 L | 21 | 63 |
| Closantel | | | | | |
| Seponver Se | Closantel, Selenium | 1 mL/5 kg LW | 25 L | 28 | 60 ¹ |
| Closal | Albendazole, Closantel | 1 mL/5 kg LW | 5 L, 20 L | 28 | 60 ¹ |

* Increase dose rate to 1 mL/4 kg LW to aid in the control of adult liver fluke

¹ ESI is under review and final ESI may be longer

Spectrum of Efficacy –

Coopers Animal Health Product Range

| PARASITE | | Valbazen | Panacur 25 | Nilverm/ Ripercol Soluble Powder | Nilzan LV |
|---|------------------------------------|-----------------------|----------------|--|----------------|
| Common Name | Scientific Name | Benzimidazole “white” | | Levamisole “clear” | |
| Roundworms (mature and immature) | | | | | |
| Small brown stomach worm | <i>Teladorsagia circumcincta</i> | ● | ● | ● | ● |
| Barbers pole worm | <i>Haemonchus contortus</i> | ● | ● | ● | ● |
| Large stomach worm | <i>Haemonchus placei</i> | | | | |
| Black scour worm | <i>Trichostrongylus</i> spp. | ● | ● | ● | ● |
| Stomach hair worm | <i>Trichostrongylus axei</i> | ● | | ● | ● |
| Small intestinal worm | <i>Cooperia</i> spp. | ● | ● | ● | ● |
| Thin necked intestinal worm | <i>Nematodirus</i> spp. | ● | ● | ● | ● |
| Hookworm | <i>Bunostomum</i> spp. | ● | | ● | ● |
| Intestinal threadworm | <i>Strongyloides</i> spp. | | | ● | ● |
| Nodule worm | <i>Oesophagostomum columbianum</i> | ● | ● | ● | ● |
| Large bowel worm | <i>Oesophagostomum venulosum</i> | ● | | ● | ● |
| Large mouthed bowel worm | <i>Chabertia ovina</i> | ● | ● | ● | ● |
| Whipworm | <i>Trichuris ovis</i> | | ● [^] | | |
| Lungworms | | | | | |
| Large lungworm | <i>Dictyocaulus filaria</i> | ● | ● | ● | ● ^l |
| Tapeworms | | | | | |
| Tapeworm (head and segments) | <i>Moniezia</i> spp. | ● | ● [^] | | ● |
| Liver fluke | | | | | |
| Early immature fluke | <i>Fasciola hepatica</i> | | | | |
| Immature fluke | <i>Fasciola hepatica</i> | | | | |
| Adult fluke | <i>Fasciola hepatica</i> | ● [*] | | | ● |
| Nasal bot | | | | | |
| Nasal bot | <i>Oestrus ovis</i> | | | | |
| Itchmite | | | | | |
| Itchmite | <i>Psorergates ovis</i> | | | | |

| Paramax Multi-Purpose Concentrate | Scanda Mineralised | Scandamax | Colleague | Paramax F | Seponver Se | Closal |
|------------------------------------|------------------------------|---------------------------------|---|---|----------------|----------------|
| Macrocyclic Lactone (Endectocides) | Double Combinations (BZ/LEV) | Triple Combinations (BZ/LEV/ML) | Organophosphate/Benzimidazole Combination | Macrocyclic Lactone/Triclabendazole Combination | Closantel | |
| ● | ● | ● | ● | ● | | ● |
| ● | ● | ● | ● | ● | ● | ● |
| ● | | ● | | ● | | |
| ● | ● | ● | ● | ● | | ● |
| ● | ● | ● | ● | ● | | ● |
| ● | ● | ● | ● | ● | | ● |
| ● | ● | ● | ● | ● | | ● |
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| | ● | ● | ● | ● | | ● |
| | | | | ● | | |
| | | | | ● | ● ² | ● ² |
| | | | ● [^] | ● | ● | ● |
| ● | | ● | | ● | ● | ● |
| ● | | ● | | ● | | |

^ Aids in the control * Aids in the control when used at a higher rate ¹ Assists in the removal of tapeworm segments ² Six weeks of age and older

Drench Resistance



Drench resistance is when a strain of parasite survives a dose of drench at the recommended dose rate. Drench resistant parasite strains are present when a chemical used at the recommended dose rate achieves <95% reduction in worm faecal egg counts.

Drench resistant worms are increasingly prevalent and becoming harder to manage. Populations of resistant worms are now widespread throughout Australia.

Resistance can develop to any drench, even if used correctly and at the recommended dose rate. However, resistance will develop faster if products are not used properly. All of the major drench groups currently available have some level of resistance in Australia.

Consult your local Animal Health Advisor for further information on determining which drench groups are effective on your property.

Benzimidazole “white”, Levamisole “clear” and Combination Benzimidazole/ Levamisole

Resistance to the Benzimidazole (white) and Levamisole (clear) drench groups is well established and documented in Australia. It is estimated that resistance to these drench families is over 90% and 80%, respectively. More than 60% of Australian flocks are estimated to have resistance to the Benzimidazole/Levamisole combinations.² However, Levamisole based drenches still remain relatively effective against Barber's Pole Worm in many Summer Rainfall areas of Australia.

Macrocyclic Lactone

Macrocyclic Lactones (often referred to as 'mectins' or MLs) have been used extensively and frequently for broad spectrum worm control in sheep. Actives included in this group are ivermectin, abamectin and moxidectin. Resistance in sheep worms to this group of drenches is no longer rare in Australian sheep flocks and is estimated to be present on up to 70% of properties in certain areas.²

It is generally accepted that in order to delay the development of resistance it is better to use a Combination drench, which includes actives from two or more effective broad spectrum drench groups, than using these drenches on their own.³



Organophosphates

Organophosphate drenches have not been as widely used as other drenches on the market and as such are still effective in areas where the efficacy of other drenches may be limited. When combined with other drench groups, organophosphates provide even more effective broad spectrum worm control. Coopers Colleague is the ideal alternative combination drench to rotate to. It contains a new active, Pyraclofos, to which there is no known resistance.

Closantel

Resistance in Barber's Pole Worm to Closantel is present on many properties in Northern NSW and South East Queensland. Producers are urged to check the efficacy of Closantel against Barber's Pole Worm where this parasite is a problem.

Triclabendazole

Small numbers of Triclabendazole resistant strains of liver fluke are present in Australia. The majority of cases identified are confined to the Goulburn Valley region in Victoria.





Recommendations for Effective Internal Parasite Control

There are a number of guidelines, which can be adopted in order to help delay the emergence of anthelmintic resistance on your property.

For further information on recommendations for effective internal parasite control please contact your local Coopers representative, consult your local Animal Health Advisor or visit the WormBoss website

www.wormboss.com.au

Determine the Need to Drench

- In deciding whether to drench it is important to assess whether the drench is required. Conducting a worm faecal egg count test can help determine this.
- Anthelmintics should be used as part of an overall strategic parasite control program. Programs have been developed for most sheep growing areas of Australia.

Choose an Effective Drench

- It is recommended that properties conduct a drench resistance test every 2-3 years to determine the effectiveness of drenches from each of the chemical groups. Faecal egg count reduction tests (FECRT) are now being used widely.
- Effective drenches should kill 95% or more of the adult and developing worms in the sheep.

Administer the Correct Dose

- Shake the container to mix contents correctly before use.
- Double check the dose rate and regularly check, calibrate and service your drench guns.
- Check sheep weights and drench to the heaviest animal in the mob.
- Always follow the label.





Follow Correct Drenching Technique

- Ensure drench gun is correctly inserted. Place the tip of the drench gun over the base of the tongue and expel dose.
- Allow time for the dose to be swallowed before moving on to the next sheep.



Ensure Correct Pre-drenching and Post-drenching Management

For Benzimidazole and Macrocyclic Lactone drenches:

- Maximum effect will be obtained if animals are held off feed for up to 24 hours pre-drenching and at least 6 hours post-drenching. This helps to prolong the period in which the drench remains in the gut.
- Do not restrict feed or water in heavily pregnant, stressed or poor sheep.

For Levamisole or Organophosphate drenches:

- Do not hold animals off feed or water overnight.
- Ensure animals are returned back onto feed and water immediately after drenching.
- Do not treat severely debilitated or stressed animals.

Drench Rotation

- It is important to continue to rotate between effective and different drench groups as part of a strategic and effective internal parasite control program.
- However, it has become evident that drench rotation alone will not prevent the development of anthelmintic resistance occurring.

Mixing Drenches

- On some properties it may be necessary to use more than one drench group family. This may require mixing of drenches to achieve effective control of roundworms. Unless the products have registered claims for mixing (e.g. Scandamax), this practice should only be conducted under veterinary direction due to concerns of compatibility, safety and efficacy.



Quarantine Drenching

It is important to prevent introducing resistant worms to your property when buying in new sheep. There is now a real risk of importing Macrocytic Lactone resistant worms to your property in many areas in this way. For effective quarantine drenching always:

- Upon arrival, allow sheep to re-hydrate overnight on water and treat the following day.
- Use either a triple combination product (e.g. Scandamax) or an organophosphate/benzimidazole combination (e.g. Colleague).
- Move sheep to a quarantine paddock. It is recommended that the quarantine paddock be one that is either going to be cropped in the coming year or a pasture paddock that is moderately contaminated with worm larvae to dilute with any introduced resistant worms.
- Monitor worm faecal egg counts 10-12 days after treatment to ensure that resistant worms have not been introduced to the property.



Coopers Sheep Drench Range



Coopers Animal Health

(A division of Intervet Australia Pty Ltd)

For further information contact your local Coopers Animal Health representative or contact Coopers Animal Health Customer Service Monday to Friday, 8.30am-5.00pm on **Toll Free 1800 226 511**

Please, visit our website on

www.coopersanimalhealth.com.au

1. Meat and Livestock Australia (2006). *Assessing the economic cost of endemic disease on the profitability of Australian beef cattle and sheep producers*, MLA Report.
2. Love, S, (2007). *Drench resistance and sheep worm control*, NSW DPI, Primefact 478.
3. Dobson, R.J., Besier, R.B., Barnes, E.H., Love, S.C.J., Vizard, A., Bell, K. and L.F. Le Jambre. (2001). Principles for the use of macrocyclic lactones to minimize selection for resistance, *Australian Veterinary Journal*, 79 (11): 759-761.

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