



FACT SHEET

OCTOBER 2019

MANAGING FLYSTRIKE

There is no “one-size fits all” approach, when it comes to effective prevention and treatment of flystrike. Instead, it relies on a multi-pronged approach.

This factsheet provides a practical guide to:

- understanding fly lifecycles and the optimal time to target them, and
- treatment options – chemical and non-chemical – available.

WHAT IS FLYSTRIKE?

Flystrike occurs when blowflies lay eggs in warm, moist areas on a sheep and these eggs hatch into maggots, which then invade the living sheep. During spring, summer and autumn – and especially when conditions are humid – flystrike can be a significant problem for New Zealand sheep farmers.

It is estimated that 2-10% of the national flock is affected by flystrike annually and the subsequent economic effects can be measured in the millions of dollars. Farmers spend in excess of \$15 million annually on sheep dips, alone.

Alongside the economic impacts of flystrike, there are obvious animal welfare issues, which are specified in New Zealand’s Animal Welfare Act 1999.

NEW ZEALAND’S PROBLEM BLOWFLY SPECIES

Four blowfly species cause flystrike in New Zealand.

In order of prevalence, they are:

- 1) Australian green blowfly (*Lucilia cuprina*)
- 2) European green blowfly (*Lucilia sericata*)
- 3) Brown blowfly (*Calliphora stygia*)
- 4) Hairy maggot blowfly (*Chrysomya rufifacies*)



Australian green blowfly (*Lucilia cuprina*)
Photo courtesy G de Lisle



European green blowfly (*Lucilia sericata*)
Photo courtesy M Friedrich



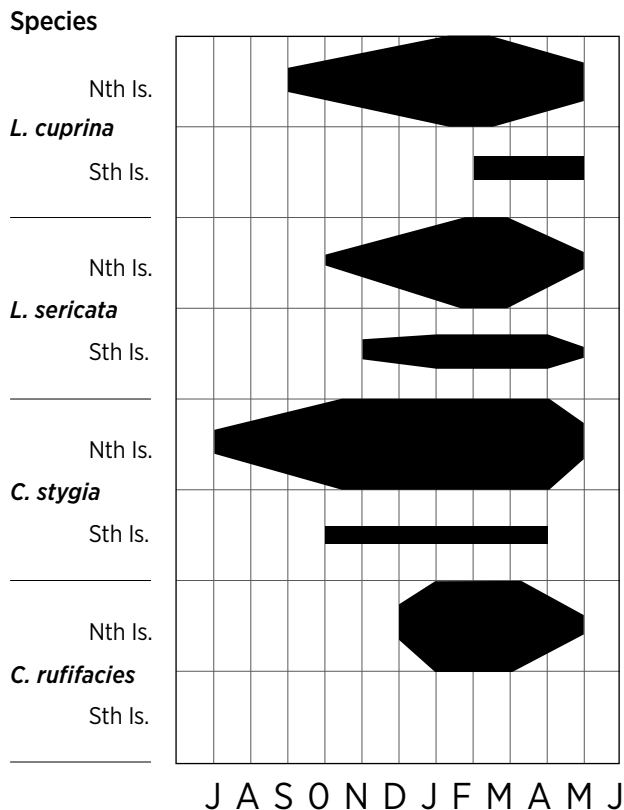
Brown blowfly (*Calliphora stygia*)



Hairy maggot blowfly (*Chrysomya rufifacies*)
Photo courtesy A.C.G Heath



SEASONAL BEHAVIOUR OF BLOWFLY SPECIES



Seasonal patterns of blowflies in the North and South Islands (Heath and Bishop, 1995)

CHEMICALS AND THEIR RESISTANCE STATUS

While resistance to chemicals is difficult to avoid altogether, strictly following the application instructions and using well-functioning gear to apply the chemicals can slow its foothold.

Organophosphates (OPs)

Regulation and safer alternative chemicals have seen the use and availability of organophosphates decrease in New Zealand. Only two active ingredients remain on the market:

- 1) Propetamphos – flystrike spot treatment and saturation dip available to approved handlers only, and
- 2) Diazinon – likely to be withdrawn from the sheep-dip market in the near future.

Resistance status:

- The strain of *L. cuprina* that entered New Zealand from Australia already carried genes for organophosphate resistance and diazinon, in particular, gave poor results from the start.

Insect growth regulators (IGRs)

IGRs describe a broad mode of action, rather than a distinct chemical group. These chemicals affect the ability of immature insects to develop through to adulthood.

There are two IGR chemical groups relevant to flystrike prevention:

- 1) Benzyl phenyl ureas (BPUs) – diflubenzuron and triflumuron

Resistance status:

- Cross resistance between diflubenzuron and diazinon resistant strains of *L. cuprina* has been reported in Australia and New Zealand.
- A 2010-11 survey found that North Island strains of *L. sericata* showed high level triflumuron resistance.

- 2) Triazine and pyrimidine derivatives – cyromazine and dicyclanil

Resistance status:

- Meaningful resistance has not emerged, despite widespread use.

Macrocyclic lactone (ML)

MLs are one of the most successful and widely-used parasiticide groups developed. In New Zealand, ivermectin is the only macrocyclic lactone available as a flystrike control and it is on the market as a combination treatment with cyromazine.

Resistance status:

- No resistance by blowflies recorded.

Neonicotinoids

Neonicotinoids are a relatively new chemical class of synthetic pesticides. There is only one neonicotinoid – imidacloprid – registered for use on sheep in New Zealand and it is available in combination with triflumuron.

Resistance status:

- None recorded in New Zealand or Australia.

Spinosyn

Spinosyns are one of the newest chemical classes of insecticides and is a natural non-synthetic compound. The Spinosyn available for use in fly treatment is spinosad. Spinosyn is also available in combination with cyromazine as a saturation jetting formulation.

Resistance status:

- No resistance recorded in flies.



Tips to slow blowfly resistance:

- Only use chemicals known to be effective.
- If treating twice in a season, rotate effective chemical groups.
- Use a different chemical to treat an active flystrike lesion than used for flystrike prevention.
- If using combination sheep dips for flystrike prevention and lice control, consider the efficacy spectrum and resistance status of the products in the combination.
- If lice control in short wool and fly control in long wool is required in the one year, use products from different chemical groups.

DIP APPLICATION METHODS

During the past three decades, there has been a marked shift from saturation, to low-volume dipping methods. A 2016 survey of more than 1200 New Zealand farmers revealed the following methods were used to prevent flystrike (categorised by wool type):

	Fine/Medium Wool	Coarse Wool
AJRs (Automatic Jetting Races)	45%	37%
Pour-on / spray-on	56%	26%
Hand jetting	25%	25%
Shower dip	17%	9%
Plunge dip	7%	1%

Automatic jetting races (AJRs)

AJRs were developed for rapid application of flystrike preventative treatments to the back and breech of sheep. To be effective, the sheep must be wet to skin level along the backline, over the rump and around the crutch area.

Low-volume pour-on / spray-ons

The terms pour-on and spray-on are essentially interchangeable - both are applied by hand-held manually operated apparatus delivering 10-50mL per dose. Only the treated area will be protected, so target the back and crutch regions. Treatments are best applied about four weeks after shearing.

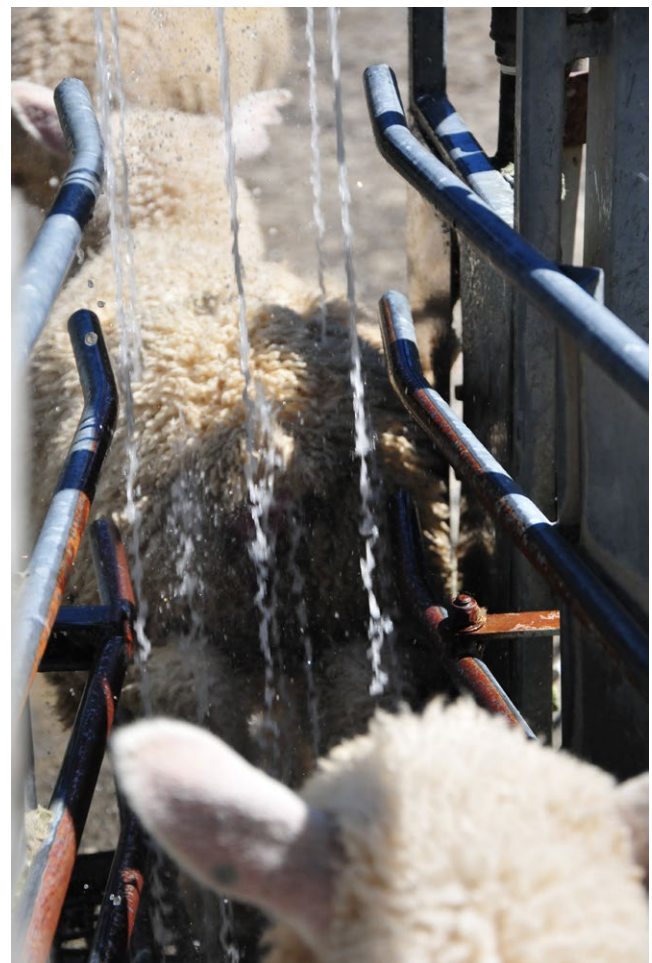
Hand jetting

Hand jetting involves the use of a specially-designed hand wand attached to a tractor tank/pump with the wand combed individually through each animal's fleece.

Treatments target the most flystrike prone areas - i.e. along the backline, from the back of the neck to the rump, and around the breech.

Shower and plunge dipping

Shower and plunge dipping are saturation methods of dipping. Shower dipping involves diluting and pumping dip wash from a sump through an overhead boom and bottom spray nozzle, while plunge dipping is essentially a large capacity bath filled with dip wash. Saturation dipping is arduous and faulty technique is usually to blame for poor results.



INTEGRATED PEST MANAGEMENT (IPM)

The best and most cost-effective approach to preventing flystrike is to use a combination of strategies that keep sheep as unattractive to flies as possible. This is called Integrated Pest Management (IPM).

IPM aims to keep pressure on a pest throughout all stages of its lifecycle and involves both chemical and non-chemical tools.

Chemical tools

Facts about blowflies:

- 1) Only a small percentage of the overall fly population affects sheep.
- 2) They are almost always attracted to the breech area.
- 3) They have a seasonal activity pattern of onset and population increase, so treatments can be timed accordingly.

These three factors mean use of a preventive chemical product can be limited to a specific time, to the breech area, and on the most susceptible animals (e.g. lambs at or before weaning).

Preventative treatment: When is the best time?

A preventative approach is strongly recommended (i.e. treating at-risk classes of stock with an effective product just before the annual risk period).

Non-chemical tools

Moisture is the critical parameter for strikes to develop. For eggs to hatch and larvae to establish, they need at least 24 hours of moist conditions in the fleece.

Husbandry

Effective internal parasite control and use of specialist high tannin crops or clean pasture result in less dags, which in turn, makes sheep less attractive to flies.

Footrot, pizzle rot, urine stain, blood, fleece rot and lumpy wool are also major fly attractants that provide moist conditions in the fleece.

Shearing and crutching are partially effective flystrike preventatives, because they reduce fleece moisture and contaminants.

Tails which are either too short or too long increase the risk of flystrike.

Dead stock

Carcasses of all types will support a maggot population. Because strike flies normally only attack a carcasses in the three days after death, carcasses should be buried, put down an offal pit, or burned as soon as they are discovered.

Farm hotspots

Some areas of a property are likely to be more attractive to flies than others. When fly pressure is high, if possible, move stock to windy exposed pastures which flies don't favour.

Genetic improvement

Increased resistance to body strike and breech strike can be gained by selecting fine wool breeds for resistance to fleece rot and for less skin wrinkle.

Cull sheep that get flystrike.

Sheep with a naturally bare breech should be considered in breeding programmes. These are available in a number of breeds from breeders throughout New Zealand. B+LNZ Genetics has incorporated DagScore into its ram selection tools.

Weather conditions

Australian work shows that early season preventative treatments that coincide with the emergence of flies from the soil can help reduce the total overall fly population throughout the season.

Record keeping

Keeping an accurate diary of when stock was treated and local weather conditions, along with regular stock checks will provide a guide as to whether a flock may require re-treatment.

Continuous heavy rainfall following treatment may have an impact on protective chemicals used, so be sure to read the product label to understand conditions which may reduce protection period.

Monitoring

Anticipation is the key to good flystrike management. Adopt a preventative rather than a reactive approach. Monitor fly traps, either purchased ready-made or home-made are an excellent way to predict the onset of blowfly activity.

TREATING AN ACTIVE STRIKE

Flystruck sheep need to be treated quickly:

- 1) Clip back any longer wool around the struck site. (If the affected area is large, do not shear the struck area to the skin, as this exposes it to sunburn which will delay healing.)
- 2) Soak the struck area with an approved dressing.
- 3) If dipping or jetting fluid is used instead of a flystrike dressing, ensure it contains a “knockdown” active ingredient.
- 4) Provide the affected animals with food, water and particularly shade, because infection causes fever.
- 5) If affected animals recover, cull them at the next opportunity.



DISPOSAL OF DIP CONCENTRATES, CONTAINERS AND USED WASH

Disposal must comply with the Resource Management Act 1991 and the regulations of regional councils.

Disposal of containers and unwanted concentrate

The Agrecovery Rural Recycling Programme is a free nationwide collection and disposal system for unwanted and expired agrichemicals. Visit www.agrecovery.co.nz for contact details.



Disposal of used dip wash

Two methods of discarding dip wash are considered adequate:

- Store the dip wash in a safe holding tank until it can be collected by a specialist contractor, or
- Spread the dip wash onto suitable land at low application rates. See your regional council for regulations, first.

RELATED RESOURCES

- Managing flystrike and lice resource book www.beeflambnz.com/knowledge-hub/PDF/managing-flystrike-and-lice
- See separate fact sheet for information on Lice
[Add link when available](#)

More information

For further information freephone Beef + Lamb New Zealand on 0800 BEEFLAMB (0800 233 352) or email enquiries@beeflambnz.com or visit www.beeflambnz.com

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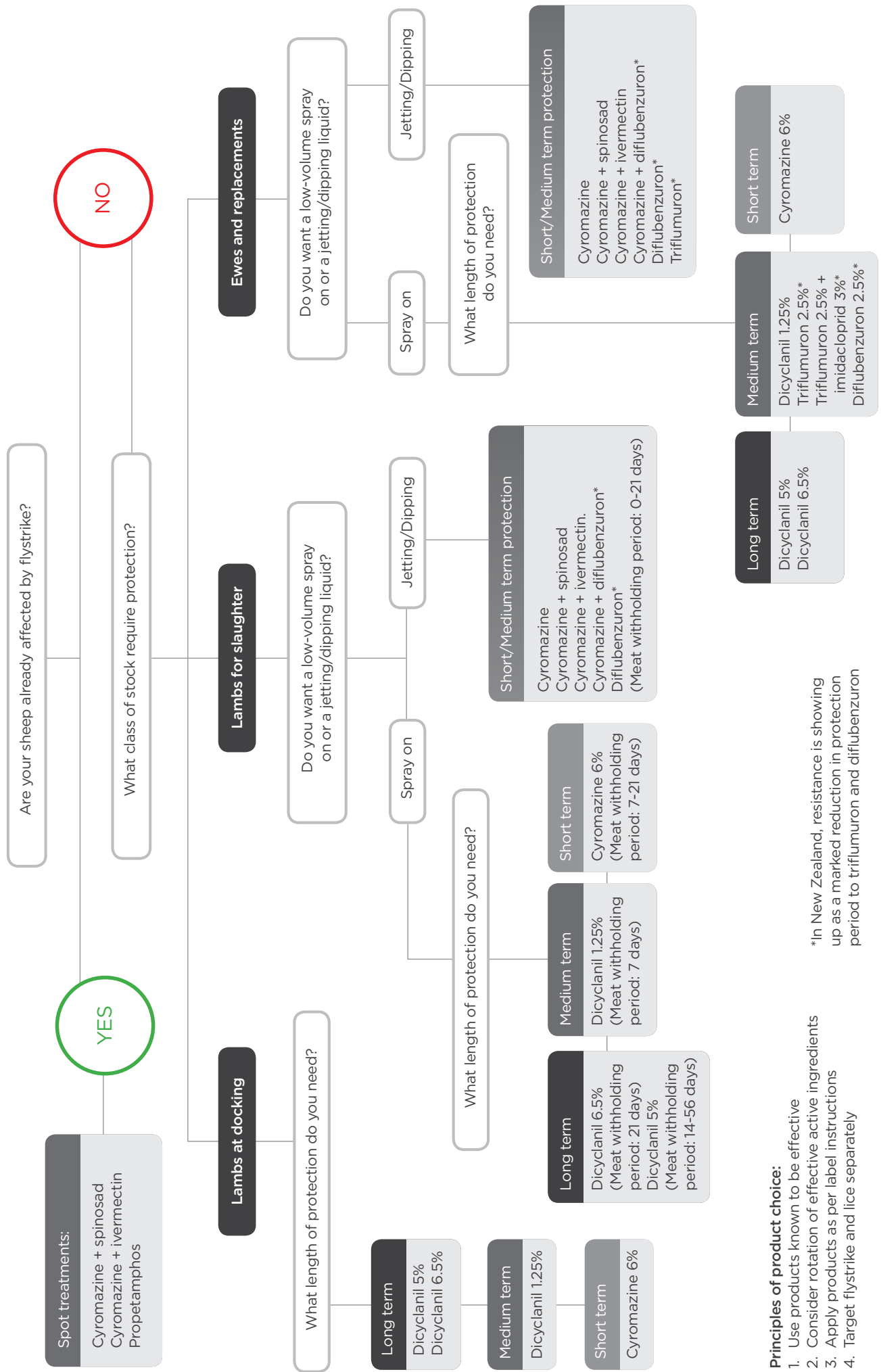
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Sheep and Beef Cattle
Veterinarians
Branch of the NZVA

Blowfly Strike Prevention & Treatment Decision Tree

This decision tree is designed as a guide only. We recommend you get specialist advice from your vet or a qualified advisor.



Principles of product choice:

1. Use products known to be effective
 2. Consider rotation of effective active ingredients
 3. Apply products as per label instructions
 4. Target flystrike and lice separately
- *In New Zealand, resistance is showing up as a marked reduction in protection period to triflumuron and diflubenzuron