



# MANAGING CHEMICAL RESISTANCE

## CASE STUDY: RETHINKING FLYSTRIKE MANAGEMENT WITH MULESED SHEEP

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### GRAHAM, HELEN, COL AND KAZ QUADE

Location: Central West, New South Wales  
Property size: 3000 hectares  
Climate: Temperate with hot summers and no dry season  
Rainfall: 475 mm (annual mean)  
Merino sheep: Dual purpose, plain bodied, mulesed Merino ewe flock. Replacement ewes are sourced from one breeder and are joined to terminal rams.  
Merino wool: Average 18 micron

When Graham and Helen Quade joined Graham's parents, Col and Kaz, to farm together near Trundle, NSW, in 2010 it was as good a time as any to rethink how they would manage their flystrike risk.

"When we moved back, we took on more land which meant more country being put down to cereal, legume and oil crops. Harvest can often coincide with our key risk time for flystrike in spring and early summer, so we figured we should tweak things to make sure our sheep would be well protected if we got too busy," says Graham.

Collectively the Quades' farm 3,000 ha across four properties, with 1,800 ha planted to wheat, barley, oats, canola and lupins. Approximately a quarter of these crops are dual purpose varieties that are also used for grazing. The balance of the country is sown with improved pastures, primarily based on lucerne, sub-clover and medic varieties.



The Merino ewe flock of 2,000 head is crossed with terminal Border Leicester rams, with the sale of wool and first cross lambs being the main income sources from the sheep enterprise.

The Quades purchase around 250-400 replacement, dual purpose Merino hogget ewes of a preferred bloodline annually in January, all of which have been mulesed.

"We used to buy replacement ewes from a couple of the bigger sheep sales and would spend a lot of time looking for the right type of animals to suit our production goals. We'd also look for ewes with attributes that would reduce their risk of strike, like how they'd been mulesed and their tail length," says Graham.

“We really noticed that the ewes with tails that are too short, even if they are mulesed, are more likely to get struck because they generally have more stain which attracts flies.”

Finding enough ewes of the right type at sales could be hard to do, so the Quades did their research to find a bloodline of productive plain bodied ewes with low wrinkle and bare breech, and with good fertility and conformation.

The Quades now buy all of their replacement ewes directly from one local breeder of this bloodline. The breeder regularly discusses their breeding objectives with the Quades which gives them confidence that the ewes are a good fit.

“The breeder we get our ewes from collects a lot of data about the performance of their sheep which are used to generate Australian Sheep Breeding Values (ASBVs) for the parent bloodline. So, while we are not selecting animals based on ASBVs, we know they are,” says Graham. “This is particularly important for us as we are buying hoggets and we want to know that we can continue to derive a benefit from our investment in these genetics for the lifetime of the ewe.”

The Quades select their replacement ewes from those on offer by looking for plain bodied ewes with good height and no conformation issues, such as dipping backs or shoulders.

## PROACTIVE APPROACH TO FLYSTRIKE

As the high-risk time for flystrike falls when the Quades are harvesting, they chose to focus their preventative strategy on actions they could take before this busy time of year.

“We really don’t want to wait until we see flies to do something about them, so we have tried to time crutching, shearing and chemical applications to provide adequate protection while the other enterprises take up most of our attention,” says Graham.

“This means we now use an extra chemical application that we didn’t before. With that in mind, we also have to be careful to still meet wool harvest intervals,” Graham says.

Ewes are crutched in the first week of September which provides breech protection for about six weeks at the start of the fly season.

At crutching, the Quades check for lice and if they are observed, they apply ivermectin to the long wool. This also provides about 12 weeks’ protection against blowflies under low to moderate fly pressure. If there are no lice on sheep, the Quades apply dicyclanil to the backline and breech. This provides a long period of protection which acts as an insurance policy over the harvest period.

“**We will eventually have to rethink what chemicals we use for lice and blowfly prevention, and when we use them, because we may see a shortening in the protection period provided by some... before this happens though, we will need to lay out all our options again and work out the best combination of activities to provide protection from flystrike for our sheep.**”

“It probably seems like an unnecessary cost but if it is a wet spring and harvest drags on, knowing the ewes have something to protect them from body strike is good and worth it the long run. Dicyclanil is also a bit easier to apply to long wool than ivermectin,” says Graham.

By the time shearing comes around in mid-December, the wool harvest interval for dicyclanil has passed. The Quades will apply imidacloprid off-shears for lice if further control is required. This has an added benefit to lice control in that it provides a further ten weeks protection from flystrike during summer.

Ewes are scanned in early January and the Quades take this opportunity for a final application of dicyclanil to the breech but only if this was not used at crutching in September, otherwise they use spinosad or ivermectin depending on seasonal conditions and fly pressure.

Lambs are marked in mid to late March. The Quades do not mules the first cross lambs and use elastrator rings for tail docking and castration. They apply spinosad to protect lambs from any maggots that may infect the tail wound.

## CONSIDERING CHEMICALS FOR OTHER PARASITES

During the drought, lice have been an ongoing issue for the Quades. To control this parasite effectively, the Quades apply a lousicide after shearing and to all introduced sheep.

While the application of imidacloprid off-shears in mid-December is primarily to target lice, it provides a useful mid-season tool to protect sheep from flystrike for a further ten weeks.

The Quade's check the Animal Health Statement that comes with the replacement ewes to understand what chemicals have been used to control both lice and flies.

"Our replacement ewes are shorn in December and we receive them in January. The Animal Health Statement is really helpful to see what has been used for lice and flies," says Graham.

"If they haven't had any flystrike protection applied, the new ewes will be given a hit of dicyclanil when we are scanning the old ewes and applying it to their breech."

Occasionally the Quades buy trade sheep, that often have variable wool length. As it is not practical to shear them on arrival, they apply ivermectin and adjust the dose based on wool length. In doing, so this also provides additional flystrike protection for approximately 12 weeks.

The Quades have recently completed exclusion fencing around their boundary that they feel will help them prevent lice incursions in the long run.

"Along with better management of the total grazing pressure, we're hoping the new boundary fence will help reduce the lice burden in our flock and we then might be able to drop one of the chemical applications for lice," says Graham.

## MANAGING SCOURING AND DAGS

Scouring due to worms does not occur often and the Quades are careful to use paddock rotations to prepare low risk pastures, particularly for more susceptible sheep such as lambs and weaners.

"We run a worm egg count regularly and the worm burden is very low, which is reassuring, and we rarely need to drench adult ewes," says Graham.

Dietary scouring can occur in July and August and dags can be quite heavy if sheep are grazed on crops from June onwards, but generally this is a period of very low fly activity. As the feed 'hardens up' with less water content towards spring, the risk of dietary scouring decreases.

Crutching in early September clears up any dags and the Quades deal with any very daggy sheep themselves before they are yarded for crutching by contractors. This helps maintain a good relationship with the shearers and contractor.

## MONITORING AND TREATMENT

The Quades increase monitoring of their flock based on weather conditions or if the pastures have a high grass seed load.

"Very warm, moist or humid weather, especially if there is little wind, really brings in the flies. During these conditions, we step-up monitoring as much as possible," says Graham. "Generally, we check each mob once a week but, if necessary, we get around them every few days."

When pastures are heavy with grass seed, seeds may penetrate the wool, particularly around the face, neck, jowls and belly, and this can cause skin lesions which may be struck. The presence of grass seed is another indicator that extra monitoring may be necessary.

Struck sheep are identified by looking for signs of discomfort and isolation, as well as the tell-tale dark patches of wool caused by wound exudates.

"Most of the strikes we see are never very aggressive; they are almost always covert or small and localised. That means we generally don't see struck sheep until we have a mob yarded," says Graham.

These sheep are removed from the mob and treated in the shearing shed by shearing around the strike and dressing the area with an application of diazinon. All infected wool and maggots are collected in a black plastic bag.

"We've got into a pretty good habit of bagging all wool and maggots from struck sheep and cooking them in the sun to make sure these can't hatch into the next lot of flies," says Graham.

"We also keep a mobile hand piece run with a 12-volt battery in the vehicle to shear off wool and maggots if we spot a struck sheep in the paddock."

## CONCERNS ABOUT CHEMICAL RESISTANCE

Whenever a case of flystrike occurs, the Quades try to work out what the cause might be. They now think most of the strike is due to application errors rather than chemical resistance.

"Most of the strike we see is on udder wool that might not get properly covered during the breech application. If the ewe has a protruding udder and placental material sticks to this, this can really attract flies post lambing," says Graham.

## KEY POINTS

- Don't wait for the first sign of flies or strike to do something.
- Time prevention activities to provide protection during high-risk periods or when you know you will be busy, such as harvest.
- When choosing chemicals, consider what is used for lice control and wool harvest intervals.
- Be prepared to revise your flystrike management plan on a regular basis.

While the Quades are not aware of chemical resistance in the blowfly population on their properties, they are very familiar with the concept given their experience with herbicides and insecticides in cropping systems.

"We are trying to use appropriate practices as best we can and know that we will eventually have to rethink what chemicals we use for lice and blowfly prevention, and when we use them, because we may see a shortening in the protection period provided by some," says Graham.

"Before this happens though, we will need to lay out all our options again and work out the best combination of activities to provide protection from flystrike for our sheep, just like we did in 2010."

**Table 1: The Quade's operational calendar for their sheep enterprise (depending on season, fly pressure and other activities)**

Class	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ewes	Scan (early Jan) Dicyclanil, spinosad or ivermectin (breach)	Move to lambing paddocks	Lamb (early Mar)	Draft (wet/dry)					Crutch Ivermectin or dicyclanil (body & breach) Condition score	Join		Shear (mid-Dec) Imidacloprid (backline) Vaccinate
Lambs	Sell ewe lambs		Lamb (early Mar)	Mark Vaccinate			Wean Drench Vaccinate Vitamin A, D & E				Shear Imidacloprid ewe lambs (backline)	
Other				Planting	Planting						Harvest	