MEAT & LIVESTOCK AUSTRALIA

Fact sheet

Cattle buffalo fly control

Introduction

Buffalo flies are small (4mm long), grey flies that live on cattle and suck their blood. They prefer warm, wet conditions and have historically thrived in northern Australia but their range is moving south due to favourable survival conditions.

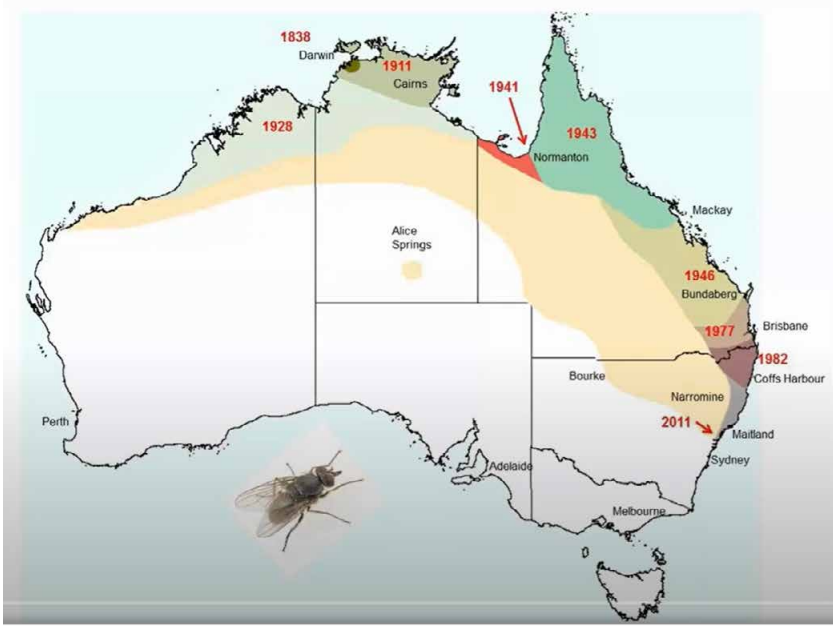

Fig 1: Map showing distribution of buffalo flies over the past 180 years. Source: Peter James, ParaBoss

Seasonality

Buffalo flies are only active in warm weather and need moist conditions for egg laying and development of larvae. Rainfall greater than 500mm per year is the main requirement for their habitat, combined with optimal mean daily temperatures of 27–30°C.

North Queensland

Since temperatures in northern Australia are suitable year-round for buffalo flies, reproduction occurs when there is adequate rainfall to maintain moist dung-pats. Maximum numbers occur in the wet season – November to March – with numbers maintaining if there are late rains (May–April). Small numbers persist during the dry season – August to November.

Central

In coastal central areas, flies persist through early summer into autumn, with lower numbers during the dry season (August–November). Central inland areas have lower numbers during the cooler part of the year and buffalo fly populations may die off completely where frosts occur.

Southern Queensland and northern NSW

In cooler, southern and inland areas, flies are active in warmer months and over winter in moist sheltered patches, where they are protected from frost.

Most flies in cooler inland areas die out each winter and populations are re-introduced as the weather warms.

Impact

Fly worry occurs when cattle change their behaviour because of flies – tossing their heads, swishing tails repeatedly, stomping, stopping grazing and standing nose-to-tail to swish flies away. Buffalo flies transfer bacterial infections and skin worms (*Stephanofilaria*), create ulcers around the eyes and on the skin – causing self-trauma – and affect milk and meat production.

As few as 100 flies observed in fly counts per cattle side can lead to economic losses. Average daily weight gain in beef cattle can be reduced by 28g and milk production in lactating cows can reduce by 520 mL/day.

Life cycle

Buffalo flies have a rapid life cycle, (12–14 days) in optimum conditions (25°C and wet). However, development stops below 15°C, or in dry conditions. Adult flies mate and females leave the cattle's body briefly to lay 14–26 eggs in fresh dung. Eggs hatch within 24 hours and the larva emerges, which feeds and moults for 4–5 days then pupates for 3–5 days. When the young adult fly emerges, they are ready to infest new cattle and will fly up to 10km to find a host.

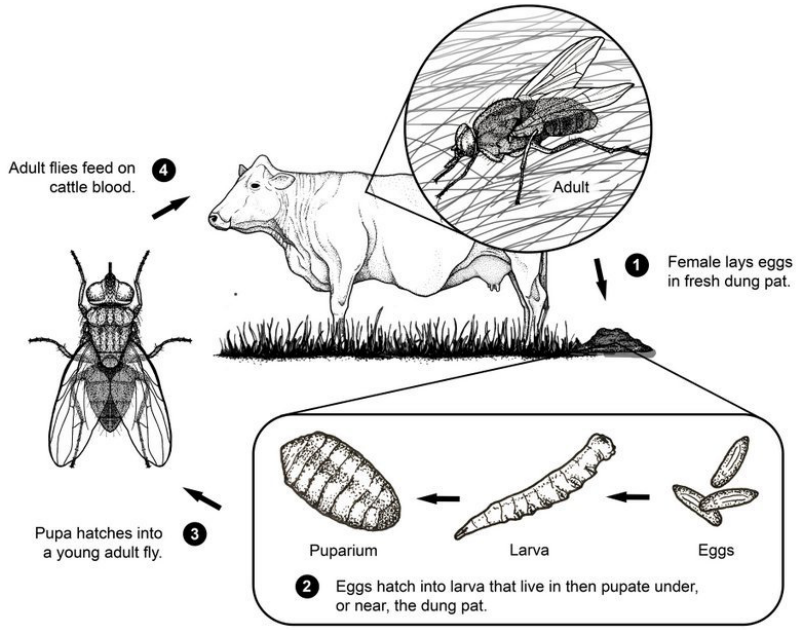

Fig 2: Life cycle of buffalo fly *Haematobia irritans exigua* (Madison Mayfield, FlyBoss)

Best-practice buffalo fly control

Buffalo flies rapidly develop resistance to chemicals. Best-practice control, therefore, should use all practical non-chemical means (genetics, culling, fly traps, dung beetles, essential oils, predatory wasps etc.) as a way of reducing reliance on chemical treatments. This will also ease the pressure of selection of non-target parasites (cattle ticks, internal parasites) and damage to beneficial dung fauna.

Non-chemical control measures

Genetics

Heritability (h2) for fly counts is estimated at 0.2 to 0.4 Bos indicus and tropical composite cattle are more resistant to flies than Bos taurus cattle. Within each herd, however, there are susceptible cattle that develop skin ulcers. These cattle should be culled and records of fly counts on individual animals kept to develop a more buffalo fly-resistant herd.

Coat colour is correlated to fly counts, with more flies generally found on darker cattle. Meat & Livestock Australia-funded research on proteomics promises to develop easier methods for selecting resistant cattle. Automation of fly counts using photographic analysis will also enhance selection.

Quarantine treatment

In southern or inland areas, buffalo flies die out each winter and are then re-introduced. Although young flies can fly as far as 10km to find a host, most spread occurs from mobs of infested cattle. This provides an opportunity to treat cattle (quarantine treatment with a knockdown spray or pour-on) to prevent them from taking buffalo flies to a new area.

Fly traps

Placed at watering points, yards or gateways where cattle can be channelled during routine daily movements, fly traps use the buffalo fly's natural tendency to rise when in an enclosed space to physically remove them from the body, causing them to die in the heated air of the trap.

More elaborate fly traps equipped with blowers and vacuums are now available in the USA and could have application in Australia.

Dung beetles

Although fly numbers haven't been observed to decrease after the introduction of dung beetles, they are a useful way to disturb dung piles and interfere with buffalo fly and bush fly egg-laying.

Predatory wasps and other bio-control agents

The introduction of wasps that prey on fly larvae in the dung has been shown to reduce fly numbers, while fungi and mites have also been recorded as preying on buffalo fly larvae in the dung. Wasps have their greatest impact if introduced early in the season, e.g. October in southern Queensland, followed by repeat releases every week. Wasps such as *Spalangia endius* are available commercially and are effective in feedlots or other areas where cattle are concentrated.

Backrubbers

Essential oils and other unregistered formulations have been used with anecdotal success in backrubbers, presumably because they provide a short-term repellent effect to the flies (see below).

Chemical products

Registered chemicals for control of buffalo flies fall into five categories:

Pour on fluralaner (isoxazoline class): This is a newly-introduced chemical that provides 21 days protection against buffalo flies. The product name is Exzolt. No resistance has been detected.

Eartags: These contain synthetic pyrethroids (SPs) or abamectin (mectins). Note that diazinon (organophosphate or OP) eartags are no longer available to purchase. All eartags should be applied as late in the season as possible, preferably after 100 flies/side (economic threshold) is reached. Eartags should also be removed once the payout period has completed (12 weeks).

Pour-on synthetic pyrethroids (SPs): These are low-volume formulations that target external parasites. Although the period of protection is generally lower than stated on most labels (due to onset of resistance), they are useful as knockdown treatments.

Pour-on mectins: These are broad-spectrum chemicals that also target cattle ticks and internal parasites. Some formulations contain extra active ingredients to enhance protection against internal parasites e.g. levamisole or cattle ticks e.g. fluazuron. Repeated use of these products, particularly in single-active formulations, will lead to higher levels of resistance in not just buffalo flies, but all parasites.

Backrubber and spray-on formulations: These chemical products registered for backrubber application are in the organophosphate class, which are toxic to people and animals and require special care with application. Legislation in the NT restricts their use to registered people. Spray-on formulations can be applied through a spray race or hand-held device and include organophosphates and synthetic pyrethroids in combination.

Diazinon eartags

Producers that previously used diazinon eartags should look at alternative methods for control. Non-chemical methods (genetic selection, culling, fly traps, dung beetles, predatory wasps, essential oils in backrubbers) can reduce fly numbers below the economic threshold, reducing the need for chemical treatments.

Once flies reach high numbers (100/side impact average daily gain), a chemical treatment should be considered.

Using synthetic pyrethroid or abamectin eartags

- Apply them late in the season (after fly numbers reach economic threshold).
- Cut them out after the payout period (3–4 months according to label).
- Rotate to a different chemical class the following season.
- Avoid using a pour-on or spray with the same chemical class in the same season to reduce selection for resistance.

Using backrubbers

- Only use during the buffalo fly season.
- Leaving backrubbers out all seasons will rapidly select for resistance to the chemical used.
- Position backrubbers in laneways or other places where cattle can readily access them i.e. on the way to dams or other water sources, near supplement drops or feed. Alternatively, position in shady areas near camps where cattle rest.
- Monitor cattle by noting use of backrubbers and fly numbers. If use of backrubber is low, move to alternative location.
- Consider using buffalo fly traps as well to reduce fly numbers.
- Use registered chemicals according to label directions and alternatives such as essential oils under manufacturers' recommendations.

For more information on control of buffalo fly on cattle, refer to FlyBoss and the Product Search Tool. All products must be used according to label instructions. Follow all meat and milk withholding periods (WHP) and export slaughter intervals (ESI).