

Vaccines - Live or dead?

Jennie Lomas BVSc MRCVS



Vaccines are designed to stimulate the immune system to recognise certain micro-organisms as a threat, destroy them and then remember them.

This mimics what happens when an animal is exposed to disease, so when the immune system meets the micro-organism again, it is able to respond faster and more effectively. A good vaccine response requires a healthy immune system, so animals that are sick at the time of vaccination may not acquire adequate levels of immunity.

There are essentially two types of vaccine - live and inactivated (dead). Live vaccines contain the living micro-organism (virus, bacteria or parasite) that is responsible for the disease, but it has been weakened, or

attenuated, in the lab. Because it is alive, the micro-organism will replicate in the vaccinated animal, producing an immune response which is very similar to the response that would be seen with a natural infection, but without causing disease.

Inactivated vaccines are produced by killing the micro-organism, either by using heat, radiation or chemicals (e.g. formaldehyde). This prevents the micro-organism from replicating, but allows it to stay intact, so the immune system is still able to recognise it.

The table below summarises the advantages and disadvantages of live and dead vaccines.

If there's a choice between a live and a dead vaccine for the disease you want to vaccinate against, and you're not sure which would be best under your circumstances, do speak to one of the vets. And always remember that, while a vaccine will increase an animal's resistance to disease, good management is still essential - even a vaccinated animal's immune system can still be overwhelmed by an excessive challenge!

	Advantages	Disadvantages
Live Vaccines	<ul style="list-style-type: none"> ● Generate an excellent immune response. ● Primary course usually only requires a single dose. ● Usually a smaller volume required. 	<ul style="list-style-type: none"> ● May cause mild disease signs (e.g. lungworm vaccination can cause transient episodes of coughing a few days later; orf vaccine will cause pustules and scabs, known as the vaccine 'take', to form at the site of administration). ● May be affected by simultaneous treatments - e.g. a bacterial vaccine may be killed by concurrent antibiotics. ● Less safe than killed vaccines, since there is a (very) small theoretical risk of the micro-organism reverting back to its virulent (full strength) form and causing disease. This, though, is very rare.
Inactivated/Dead Vaccines	<ul style="list-style-type: none"> ● Less likely to cause general illness in a healthy animal. ● Often have a longer shelf life than live vaccines. 	<ul style="list-style-type: none"> ● Primary course usually requires two doses, with a specific time interval. ● Tend to provide a shorter duration of protection than live vaccines. ● Contain 'adjuvant', an additive which helps to accelerate, prolong or enhance the immune response. This adjuvant may cause a local reaction or inflammation at the injection site.



WELCOME TO
farm
2019 news

TRUSTED
CARING • PROFESSIONAL

APRIL 2016

TB Resources

Just a reminder, for those of you that haven't already, to have a look at the new online information hub, www.tbhub.co.uk, for sound and wide-ranging information and advice on TB control, and how best to protect your farm from a TB incursion.

The website is a really useful and practical one and, amongst many other things, contains information on each of the five key areas of Defra's bovine TB biosecurity drive:

- Taking care when buying livestock.
- Taking care around neighbouring farms, e.g. using the ibTB website (www.ibtb.co.uk) to check on local breakdowns, so that extra precautions can be taken to prevent contact between herds.
- Keeping badgers away from cattle, and cattle away from badger latrines and setts.

- Managing cattle feed and water to reduce or prevent badger access.
- Storing manure for longer before spreading it on fields, and taking care where it is spread.

As we all know, controlling TB in a herd can be a long, hard slog, and often it seems like there's no end in sight, but there are things that each of us can do to make a genuine difference.

Whether your herd's infected or not, have a look at the TB hub website and see what you think!



ScarsdaleVets
Farm
www.scarsdalevets.com

Pride Veterinary Centre
Hospital. Practice. Resort.

SpringwoodVets
The University of Nottingham School of Veterinary Medicine and Science
RCVS ACCREDITED PRACTICE
xlVets

Contact us:

FARM & EQUINE CENTRE
Markeaton Lane, Markeaton,
Derby DE22 4NH
Tel: (01332) 294929

MAIN HOSPITAL
Pride Veterinary Centre,
Riverside Road, Derby
DE24 8HX
Tel: (01332) 678333

PARK FARM
Park Farm Centre, Allestree,
Derby DE22 2QQ
Tel: (01332) 554422

DUFFIELD
15 Town Street, Duffield
Derby DE56 4EH
Tel: (01332) 841700

MICKLEOVER
3 Vicarage Road,
Mickleover, Derby
DE3 0EA
Tel: (01332) 518585

HILTON
6 Witham Close
Egginton Road, Hilton
Derby DE65 5JR
Tel: (01283) 732999

OAKWOOD
Unit 9, Oakwood District
Centre, Oakwood
Derby DE21 2HT
Tel: (01332) 666500

SHELTON LOCK
247 Chellaston Road,
Shelton Lock
Derby DE24 9EG
Tel: (01332) 700321

THE SPRINGWOOD VETERINARY CENTRE
90 Spring Terrace Road
Stapenhill, Burton-on-Trent
DE15 9DX
Tel: (01283) 568162

STRETTON
36 The Green, Stretton,
Burton-on-Trent
DE13 0EQ
Tel: (01283) 565333

post@scarsdalevets.com

Please note that telephone calls are recorded for quality and monitoring purposes.

Lameness Research

Update

A recently-published study by the team at Nottingham University on lameness on dairy farms in the Midlands, which some of you may have been involved with over the past couple of years or so, has shown some interesting results.

The study investigated the treatment of chronic hind limb lameness (greater than two weeks' duration) caused by claw horn lesions, and found that a) response to treatment was poor regardless of the treatment administered (treatments were a therapeutic foot trim, a therapeutic foot trim plus a shoe, or a therapeutic foot trim plus a shoe plus a three-day course of anti-inflammatory), and b) 38% of cows were lame on the other hind limb a month later.

When compared with an earlier study into the treatment of acutely lame cows (less than two weeks' duration), two key conclusions can be drawn:

- Any delay in treating claw horn lesions has a profound effect on reducing the rate of recovery. Newly lame cows respond far better to treatment than cows that have been lame for a long time. So early identification and prompt effective treatment is vital - dig out those mobility scoring pads and brush up on your foot trimming skills!
- It's best to assume that lame cows have lesions on both hind feet, regardless of which leg seems to be the lame one. Always examine and treat both left and right feet.

Sole ulcers, like this one, are notorious for taking many months to recover. Early recognition and treatment makes a big difference.



Carolyn Baguley MA VetMB CertAVP (Cattle) MRCVS

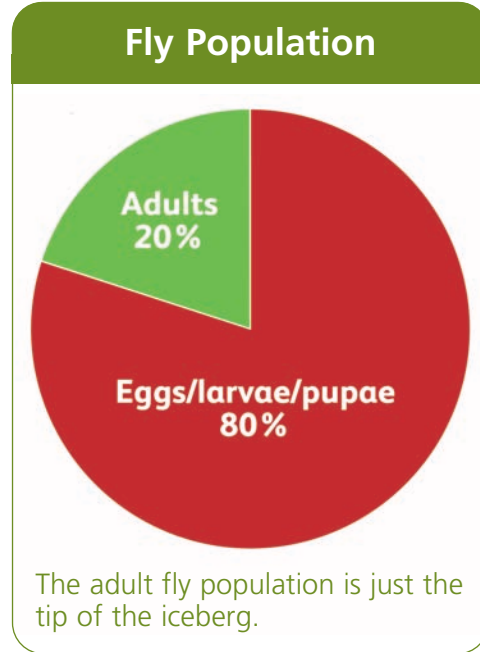
Bored of the flies?

How well did your fly control strategy work last year? Many farms seem to be struggling more with flies now than they were five or ten years ago. Why? And what's the solution - another bottle of pour-on?



Flies are irritating to humans and animals, they transfer disease and cause stress and sometimes reduced dietary intakes and production losses. Many farmers start to think about fly control in late June or July, but the best time to start tackling the problem is now, in April or May, since this is when the flies first start to breed. Getting on top of things before the summer population explosion makes life a lot easier by the time August and September come round!

The adult flies we know so well are actually only a small part of the whole fly population, as the pie chart illustrates. 80% of the population at any one time is in the form of eggs, larvae or pupae. If we can deal with these and stop the adults hatching in the first place, rather than waiting for adult flies to appear and then using our cattle as bait to kill the flies with our pour-ons, we'll be far more effective.



A multi-pronged strategy could include the following:

Adult fly control on the cow

This is the classic fly control strategy used by most farmers. All the available six or seven products are based on the same type of chemicals, synthetic pyrethroids, and all those that are licenced for cattle are pour-ons, apart from Electron Fly tags (Zoetis UK Ltd.). These products, which both repel and kill flies, usually provide protection for between four and eight weeks.

The best time to start to apply them is generally late April or early May (depending on the weather), before significant numbers of adult flies are visible. Later on, when millions of eggs/larvae/pupae are already present, ready and waiting to hatch out, the sheer volume of flies makes them hard to control, so keeping the population as low as possible from the beginning can help a lot. To expect one or two doses of pour-on to keep the farm's fly population at bay all season is a lot to ask!

Some farmers have commented that the pour-ons don't work as well as they used to. It may be that flies have developed some resistance, although it's hard to tell for sure since the manufacturers don't do efficacy testing on these products. Switching from one product to another may help a bit, but don't expect any miracles - the chemicals are very similar.

Adult fly control in the environment

Targeting adult flies in the environment helps keep them away from the cows! A number of 'knock-down' products to kill flies are available, in the form of granules, paints or sprays. Some products also contain pheromones to attract the flies, some don't and rely on flies landing on them by accident. If you use these, place them in fly resting places and use something like a cola drink or meat (if you can bear the smell!) to help attract flies to them.

Some of these products remain active for several months, others for only two or three weeks. Sticky sheets or tapes are effective, but need changing frequently. Traps (electric or the very simple meat-in-a-bottle trick) can help too - try a few ideas and see what works best.

Reducing breeding sites

Keeping farms tidy, minimising breeding sites and clearing muck away frequently helps keep flies at bay. Favourite breeding sites include muck heaps, slurry lagoons and storage tanks, old or damp buildings, and wooded areas with streams. Have a think about where flies are likely to be breeding on your farm, how efficiently you manage muck and waste, and how good your drainage and ventilation is.

How often are your muck heaps cleared? If it's more than every three weeks or so, this will give flies enough time to produce another generation. How often are your straw yards or straw cubicles cleaned out completely - especially the corners, the holes in the floor and those damp areas under the water troughs? When you do clean out, have a close look and see if you can see any maggots or casts.

Flies love a nice big open slurry lagoon to breed in. They prefer a solid crust to rest on, so stirring regularly, keeping the crust to a minimum and emptying the lagoon as often as you are able can help to keep flies away. Slurry towers provide far less of a problem - the less open surface area of manure, the less space available to flies to breed.

Face flies (*Musca autumnalis*) feeding around the eyes. Face flies can transmit New Forest Eye. Photo courtesy of Simon Lachance, University of Guelph.



Larval control in the environment

Breeding sites such as slurry lagoons, muck heaps, straw pens and anywhere else where manure accumulates can be targeted for one of two methods of larval control.

Parasitic wasps destroy fly pupae by laying their eggs inside them, so the flies never hatch. The wasps do, but they are harmless (and don't sting!). Parasitic wasps are imported from the USA, and need reapplying once a fortnight after the initial application in mid- to late-April or May. The cost is therefore relatively high, but wasps are used successfully by a significant number of UK farmers.

Insect growth regulator chemicals do a similar job of preventing flies hatching, albeit by a different mechanism. The chemicals are usually in the form of granules and also need regular reapplication, since flies tend to breed in the 30-40cm of muck or straw nearest the surface.

The best fly control strategies use a combination of these approaches, rather than just relying on one. Have a think - is there anything else you could add in to your fly control programme this year?



Female face fly. Stable flies, horn flies and house flies also pose a nuisance and can transmit other diseases, such as summer mastitis. Photo courtesy of James Lindsey at Ecology of Commanster.



Empty house fly pupae that were killed by parasitic wasp larvae. The exit holes through which the adult wasps emerged are clearly visible.