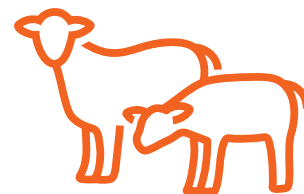


TECHNICAL INFORMATION UPDATE



Faecal Egg Count (FEC) monitoring in sheep

— also known as Worm Egg Count (WEC)

The most important worms in Australian sheep are known as the ‘gastrointestinal nematodes’. They live in the abomasum (4th stomach) and intestines and cause sickness and death, as well as reducing appetite, feed intake and productivity.

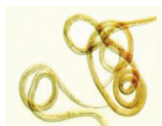
FECs are essential in determining the level of adult internal parasite burden and providing valuable information to influence the drenching decision.

Key gastrointestinal nematodes



Barber's pole worm (*Haemonchus contortus*)

Lives in the abomasum. Likes warm moist conditions so very common in northern areas, but increasing in southern regions especially in times of summer rainfall. Sucks blood. Females lay 5,000-10,000 eggs per day.



Brown stomach worm (*Teladorsagia circumcincta*)

Lives in the abomasum. Copes well with cooler conditions so common in southern regions. Females lays 50-100 eggs per day.



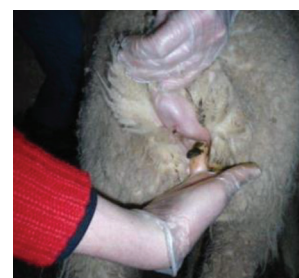
Black scour worm (*Trichostrongylus* spp.)

Several species which live either in the abomasum or small intestine. Generally causes black scours and is common across all of Australia. Females lay 100-200 eggs per day.

FECs and worms in the gastrointestinal tract

The number of worms in the sheep's stomach and intestines is strongly correlated with the number of eggs seen in the faeces. Therefore, counting the eggs in dung samples is a simple and non-invasive way of monitoring worm burdens in sheep.

The best method of collecting the faecal matter is directly from the rectum of the individual animal. Alternatively the samples can be obtained from the field after holding the flock for around 15 minutes in a mob. Ensure the faecal sample is clean from foreign material, is fresh (warm) and each sample is from a unique animal.



Counting worm eggs

1. Dung samples are weighed, mixed in saline and a sub-sample taken and inserted into a counting chamber.
2. The eggs float to the top of the chamber and are counted by looking at them under a microscope.
3. The result is expressed as the number of eggs per gram of faeces (epg). Some eggs, such as those of *Nematodirus*, are very distinctive and can be differentiated visually.
4. The majority of gastrointestinal nematode eggs are of similar appearance and can't be accurately distinguished.

Larval culture and larval differentiation

1. Larval culture involves incubating the worm eggs in the lab for 7 days under specific conditions to allow the larvae to hatch and develop to the third stage (L3).
2. These larvae are stained and examined under a microscope to work out the species of worms present in the sample.



Number of samples required

- The higher the number of samples taken, the better indication of the worm burden in the whole mob.
- Studies have shown that 15 samples will usually correctly reflect the status of a mob of 200 head, but accuracy decreases as mob size increases.
- If high variation is suspected, then individual samples are preferred
 - e.g. if 10 samples are pooled and one animal has a count of 1,000 epg and the remaining nine head have zero, the average will show 100 epg for the mob.
- Individual samples are important when sampling mobs of mixed age, condition scores and pregnancy status (dry, single or twin bearing ewes).
- **For drench tests, international guidelines recommend a minimum number of 15 head in each group.**

Individual FECs

- These are used when you need to know the FEC of each sheep, e.g. for ranking sires for the Australian Sheep Breeding Values (ASBVs).
- Individual FECs are used to gain an understanding of the variation in worm burdens across a mob of sheep.
- Individual FECs provide better statistical accuracy around the estimate of drench efficacy in drench tests.

Pooled FECs

- These show the average FEC from a composite (pooled) sample of dung taken from many different animals.
- Used for routine monitoring of mobs of sheep.
- These are cheaper and easier to collect and process than individual samples, and should be used regularly to check on worm levels in different mobs.

The causes of variation of FEC within a sampled mob

Ewes

- In a mixed mob comprising dry, single-bearing and twin-bearing ewes, wide variation is observed
 - Mature dry ewes will have FEC of 0-100 epg
 - Single-bearers 400-600 epg
 - Twin-bearers will have FECs of 800-1200 epg.
- FECs in pregnant ewes start to increase a few weeks before birth and continue to be high right through lactation.



Rams

- A mob of rams will show a wide spread of FECs.
- Testing a mob of young rams in northern regions will typically show FECs ranging from 0 to 2,000 epg.
- In southern Australia, ram FECs will typically range from 0-1,000 epg.
- The heritability of FEC are reasonably high ($h=0.30$) and rams contribute half the genetic material of the offspring. It is therefore important to consider ASBV for FEC when selecting rams.

Lambs

- FEC is correlated with body condition score.
- Poor lambs will often carry high worm burdens, while fast-growing strong lambs will have lower FECs.
- To assist with reducing the numbers of poor lambs, ensure good health management practices and vaccinate against CLA, Clostridial Diseases, Erysipelas Arthritis, OJD and Scabby Mouth.

Target FECs for drenching

- Target FECs for drenching vary considerably depending on season, feed availability, class of stock, body condition score, rainfall, previous exposure to worms and paddock contamination.
- Appetite and feed intake can be affected significantly (greater than 10%) when the animal has a low worm burden (100 epg). To ensure optimum return on investment, drenching should be considered at low FECs when production or supplementary feeding.

Important factors to consider from a FEC

- Low FEC of 100 epg in summer or autumn could also contribute significantly to pasture contamination for lambing ewes and their lambs.
- Fast-growing meat breed lambs on high-protein, high-palatability pastures may cope with FECs of 400 epg with little impact on their performance.
- Farms with high levels of barber's pole worms, due to the blood-sucking behaviour of juvenile worms, can experience serious production losses and even death before worm eggs are produced.

Faecal egg count (epg) thresholds

Faecal egg count thresholds are best approached by referring to the Wormboss guide (wormboss.com.au).

Class of sheep or time of year	No culture OR less than 60% barber's pole	Greater than 60% barber's pole
Ewes (dry to mid-pregnancy) or wethers	250	400
Ewes pre-lambing	150	250
Sheep under 18 months or rams	150	300
Time of 1st or 2nd summer drench	100	100

Table 1. An example of Faecal egg count thresholds (Central NSW). Each mob of sheep are influenced by different factors, therefore the thresholds are a guide only (wormboss.com.au)