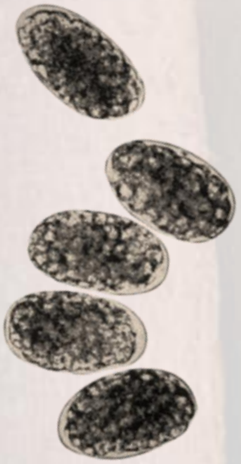
On-farm selection for resistance to parasites

There are many strategies for controlling internal parasitism (worms) in sheep and goats, but genetic selection probably offers the best long-term solution. Resistance to parasites is the ability of the sheep or goat to limit the establishment, reproduction, and survival of parasites within their bodies. It is quantified by fecal egg count (FEC). Resistance can be present at birth (innate) or acquired through exposure and immune response. Resistance varies by species, breed, and individual animal and is a moderately heritable trait.



Basics of on-farm selection for resistance to parasites

- Identify resistant animals
- Cull most susceptible animals
- Select more resistant replacements
- Buy resistant rams/bucks

Collection and evaluation of fecal egg counts (EPG: eggs per gram of feces) is the most effective way to identify resistant and susceptible animals. Selection using other traits such as FAMACHA© score, bottle jaw, body condition score, and deworming history can improve resistance, but progress will be slower. This is because these traits select more for resilience than resistance. Resilience is a separate trait. It is the ability of the animal to tolerate a parasite load. Resilient animals may still be shedding a lot of eggs, which is why it is important to select for resistance, too.

Small ruminants can be selected for resistance to parasites at various stages in their life cycle. The age to begin selection varies by species, breed, and age of first exposure. It is most common to select animals when they are young and still growing. The periparturient period has been proposed as an alternative to evaluating lambs.

Requirements for on-farm selection

1) Individual animal identification
2) Compare animals in same contemporary group(s): similar age, raised together.
3) Significant exposure to worms: grazing for at least 30 to 45 days at a time of the year when parasites are active.
4) High enough fecal egg counts: group average of at least 500 EPG, preferably > 1000.
5) Significant range in fecal egg counts: difference of at least 1500 EPG between highest and lowest FEC.
6) Quantitative fecal egg counts (EPG) for comparison.

By Susan Schoenian, Sheep & Goat Specialist Emeritus, University of Maryland Extension. For more information, go to www.wormx.info