

The Five Point Check[®]

By Susan Schoenian

Anthelmintic resistance is a genetic change in the worm population that allows some worms to survive drug treatment. From a practical standpoint, it is when efficacy of treatment falls below that which is normally expected.

Anthelmintic resistance has been documented on many sheep and goat farms, especially those in the southeastern United States. Resistance exists in all three major drug classes (benzimidazoles, imidazothiazoles, and macrocyclic lactones) and is considered to be widespread and growing. It is not limited to sheep and goat parasites.

Anthelmintic resistance is inevitable, as no treatment can successfully eliminate all worms. In the past, sheep and goats were dewormed frequently, with relatively good success. However, this practice was short-sighted and not sustainable. In fact, it accelerated the rate by which worms developed resistance to the drugs. Some farms are already experiencing “total anthelmintic failure.” Total anthelmintic failure is when the parasites have developed resistance to all of the available drug classes.

Because of the widespread development of resistant worms, internal parasite control programs must now accomplish two goals. Besides reducing the mortality and morbidity associated with clinical parasitism, control programs must also strive to reduce the speed by which the worms develop resistance to the drugs. Drug resistance varies by geographic region and individual farm and is influenced by past deworming practices. Some farms may still have efficacy with some drugs. They need to preserve this efficacy for as long as possible.

The introduction of new drugs will only provide a temporary solution to the drug resistance problem. The worms will develop resistance to the new drugs in the same manner they developed resistance to the current drugs, especially if the drug is used frequently.

TARGETED SELECTIVE TREATMENT (TST)

Targeted Selective Treatment (TST), a phrase coined by South African researchers, is a relatively new principle in parasite control. TST identifies individual animals that require anthelmintic treatment. By leaving a portion of the herd untreated, the amount of refugia is increased. Refugia are worms that have not been exposed to the drug(s). They remain susceptible to anthelmintic treatment. Without these susceptible worms in the population, resistant worms will simply breed with other resistant worms and produce more resistant worms, eventually rendering all drug treatments ineffective.

For TST to be viable, there must be practical tools that farmers can use to make deworming decisions. The first tool developed was the FAMACHA[®] system. The FAMACHA[®] system employs a color eye chart that depicts five clinical categories and eye colors. When the FAMACHA[®] system was being developed, the colors were matched to packed cell volumes (PCVs) of individual animals. PCV is the diagnostic test for Haemonchosis. It is an estimate of anemia, the primary symptom of barber pole worm infection and other blood-feeding parasites.

The farmer evaluates the color of the animal’s ocular membranes and compares it to the colors on the FAMACHA[®] chart. Each clinical category (color) offers a treatment recommendation. FAMACHA[®] scores 1 and 2 do not generally require anthelmintic treatment, whereas FAMACHA[®] scores 4 and 5 require treatment with an effective anthelmintic. A FAMACHA[®] score of 3 is borderline and may or may



The FAMACHA[®] Scorecard was created by the South African Veterinary Association.

Table I. FAMACHA[®] scores

Clinical category	Eye lid color	PCV	Tx recommendation
1	Red	≥28	No
2	Red-Pink	23-27	No
3	Pink	18-22	?
4	Pink-white	13-17	Yes
5	White	≤12	Yes

not require treatment, depending on the presence of other symptoms and other parasites.

The FAMACHA[®] system was developed by South African researchers. The FAMACHA[®] card was copyrighted to prevent its misuse. In the United States, the sole distributor for FAMACHA[®] cards is Dr. Ray Kaplan’s lab at the University of Georgia College of Veterinary Medicine. Veterinarians and other animal health professionals may purchase FAMACHA[®] cards, whereas producers must take an approved training in order to receive a card and FAMACHA[®] certification.

The American Consortium for Small Ruminant Parasite Control (ACSRPC) has taken the leadership in providing FAMACHA[®] training to small ruminant producers in the United States. The FAMACHA[®] system has been widely adopted by sheep and goat producers, especially those in the eastern half of the U.S. At the same time, there is a continued need for training and education.

While the FAMACHA[®] system is very useful, its use is limited to those parasites which cause anemia. This includes the barber pole worm (*Haemonchus contortus*), hookworms (*Bunostomum*), and flukes. The barber pole worm is the primary parasite in most regions of the United States, even in the more northern climates. Hookworms are not common, nor very pathogenic, whereas flukes can be common in some regions in the U.S.

THE FIVE POINT CHECK[®]

To address the limitations of the FAMACHA[®] system, the South Africans developed the Five Point Check[®]. The Five Point Check[®] is an extension of TST. It involves five checkpoints on the animal. As seen in **Figure 1**, the five checkpoints are ocular mucous membranes (FAMACHA[®] score), back, tail, jaw, and nose. The Five Point Check was developed for sheep. For goats, it is suggested that the nose checkpoint be replaced with coat appearance. Nasal bots are not considered to be a significant problem in goats.

Table II. The Five Point Check®

Check Point	Observation	Possibilities
1. EYE	Anemia 1-5 (FAMACHA® card)	Barber pole worm Liver fluke Hookworms Other
2. BACK	Body condition score 1-5 (BCS card)	Brown stomach worm Bankrupt worm Nodular worm Other Tapeworms
3. TAIL	Fecal soiling (1-5) Dag score card	Brown stomach worm Bankrupt worm Nodular worm Other worms Other
4. JAW	Soft swelling "Bottle jaw" 1-5	Barber pole worm Liver fluke Hookworms Other worms Other
5. NOSE	Discharge 1-5	Nasal botfly Lungworms Pneumonia Other

Source: Targeted Selective Treatment of Sheep Using the Five Point Check®, Bath, G.F., Van Wyk, J.A. and Malan, F.S. Source: www.smallstock.info

Table III. Body Condition Scoring

Score	Spinous process	Rib cage	Loin eye	
1	Very thin	Easy to see and feel, sharp	Easy to feel and can feel under	No fat covering
2	Thin	Easy to feel, but smooth	Smooth, slightly rounded, need to use slight pressure to feel	Smooth, even fat cover
3	Good condition	Smooth and rounded	Smooth, even feel	Smooth, even fat cover
4	Fat	Can feel with firm pressure, no points can be felt	Individual ribs cannot be felt, but can still feel indent between ribs	Thick fat
5	Obese	Smooth, no individual vertebra can be felt	Individual ribs cannot be felt. No separation of ribs felt.	Thick fat covering, may be lumpy and "jiggly"

Source: www.smallstock.info

Table IV. Dag Scoring

Score	Description	Action
0	No fecal soiling at all. No indication for treatment/action.	None
1	Very slight soiling on edge of tail/on each side.	None
2	Slight soiling on edge of tail/on each side.	Usually none
3	Moderate soiling, dag formation.	Consider treatment/action
4	Severe soiling, severe dag formation.	Treatment recommended
5	Very severe, watering diarrhea extending to hocks.	Treatment essential

Source: University of Pretoria

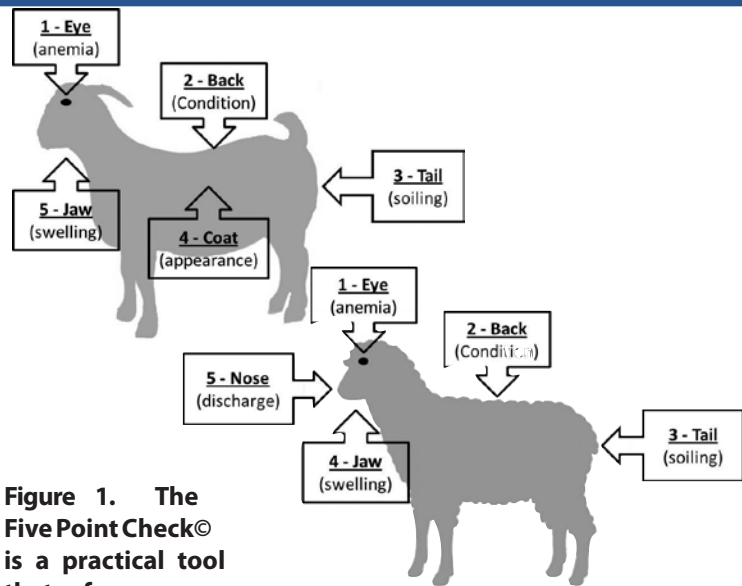


Figure 1. The Five Point Check® is a practical tool that farmers can use to determine the need for deworming for all internal parasites that commonly affect sheep and goats. Images provided by Susan Schoenian, Sheep and Goat Specialists, University of Maryland Extension.

The Five Point Check® includes FAMACHA® scoring. The ocular mucous membranes are evaluated for anemia and the worms causing anemia. The jaw is examined for the presence of submandibular edema, more commonly called "bottle jaw." Bottle jaw is caused by the same blood-feeding worms that cause anemia. It is an accumulation of fluid under the jaw. Goats with bottle jaw usually have a heavy parasite load. Bottle jaw seems to be less commonly observed in goats than sheep.

Body condition scoring is used to determine the amount of fat on a goat. A body condition score can't be determined by simply looking at an animal. It is accomplished by feeling for the amount of fat or muscle, primarily in the loin area. Many worms cause loss of body condition. Poor body condition can also be a sign of poor nutrition or other disease.

Coat condition is another subjective score that can be used to evaluate the health and well-being of a goat. A healthy goat usually has a healthy hair coat. A dull, thin, or coarse hair coat can be a sign of disease. There aren't any official scoring systems for hair coat quality in goats.

In summary, with the Five Point Check®, the emphasis has changed from identifying animals that require treatment to those that are unlikely to benefit from treatment.

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