

Palau Livestock Management Academy

Field Fecal Examination for Diagnosis of Parasitic Infections

Introduction and Basic Procedures

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The fecal examination for diagnosis of parasitic infections is probably the most common laboratory procedure performed in a veterinarian clinic. These parasites produce eggs, larvae, or cysts that leave the body of the host by way of the feces. Sometimes, even adult worms may be seen in the feces especially when the intestine of the host is inflamed. Parasitic worm eggs from the respiratory system may be coughed into the throat and swallowed and appear in the feces. Parasitic forms seen under the microscope have characteristic morphologic features that with a little practice can be diagnostic for a particular parasite. Fecal examination can reveal the presence of parasites in many parts of the animal body. This clinic will concentrate on parasites inhabiting the digestive system.

The following diagnostic procedure is not meant to be a tool for every animal producer to use but is a synopsis of what a veterinarian, veterinarian technician or a trained member of an animal producer's coalition may use. Where reliable veterinary service is not readily available an association of producers may invest in the appropriate equipment. At monthly or quarterly meetings members of a cattlemen's association may bring fecal samples for diagnosis and adjust their worming regime as needed.

Advances in light weight materials, long lasting field rechargeable batteries, and superior microscope lens and objectives have made it possible to for diagnosticians to do quick, basic, routine analysis away from the lab and even in the field.

The equipment needed for the diagnosis of fecal parasitic infections by flotation is minimal. A microscope with a lens and objective that can magnify 400X, the appropriate slides and cover slips and test tubes to mix the fecal slurry are the basic tools you will need. If the centrifugal method is used then an electric or hand operated centrifuge is needed.

The sequence for the diagnosis of fecal parasitic infections follows.

Fecal examination should be done on fresh samples. If fecal samples are used after being in the environment for hours or days accurate reading of parasite indicators cannot be guaranteed. Also, free- living nematodes rapidly invade a fecal sample on the ground and can confuse diagnosis. Several grams of feces should be collected immediately after observing defecation.

The sample is then prepared for flotation or centrifuging. This procedure entails grinding if needed, mixing with clean water, straining and mixing with a prepared flotation medium. There are several choices for the flotation medium used in fecal material flotation. There are several commercial flotation mediums available. A supersaturated medium of sugar or salt can be made by heating water just below boiling then adding salt or sugar until no more will dissolve. This will raise the specific gravity of the mixture. The sample then undergoes fecal flotation. This procedure is based on the fact that parasitic material is less dense than the flotation medium allowing it to float to the top of the container where it can be collected for microscopic evaluation. The flotation method takes several hours. The procedure can be sped up by the use of a centrifuge. This method spins the mixture in a horizontal attitude which forces the heavier medium to the bottom of the tube and allows the lighter parasite eggs to rise to the top. A hand crank or powered centrifuge may be used with like results.

To prepare the sample for flotation it is mixed with clean water and strained through a tea strainer or cheese cloth. The strained material is mixed with the flotation medium and allowed to sit overnight or centrifuged.

A cover slip is placed on top of the test tube in contact with the mixture and then lifted straight up. The cover slip is placed on the slide and then onto the microscope table.

Depending on the parasite and the skill of the technician a parasite load can be determined.

Parasite loads vary with weather, season, rainfall, height and abundance of feed on offer, age and/or size of the host animal, extenuating health problems and nutrition of both the soil where the host grazes and the host. In some situations the host animals in a herd can be parasitized and symptoms do not stand out on individuals because all animals are infected.