

2007 – Progress Report Workpackage 3

'If you cannot measure it you cannot manage it'.

PARASOL is committed to producing practical approaches for reducing the spread and further development of anthelmintic resistance in ovine and bovine nematodes and an essential part of being able to manage resistance is to be able to measure it. The most widely used test is the Faecal Egg Count Reduction Test (FECRT) in which eggs per gram of faeces are measured at the time of treatment and 10-14 days later. It works with all anthelmintics and all species of gastrointestinal worms. However, are the recommendations published under the auspices of the World Association for the Advancement of Veterinary Parasitology in 1992 still the best particularly with cattle? How many animals should be in each group? What level of infection is required for animals to be included in the treatment groups and what statistical packages should be used? New guidelines are being written incorporating bootstrapping in the statistical package for calculating the results. It is hoped that they will be adopted as both EU and world standards. Since few FECRTs have been run on cattle nematodes, trials have been run in three countries to look for ivermectin resistance. This has already been found in the UK. Resistance has been found in Belgium, Germany and Sweden in *Cooperia oncophora* with some evidence for resistance in *Ostertagia ostertagi*. Recommendations that cattle farmers can use to slow the development and spread of anthelmintic resistance are being prepared.

The two most widely used *in vitro* tests are the Egg Hatch Test (EHT) for benzimidazole resistance and the Larval Development Test (LDT) for benzimidazole and levamisole resistance. To ensure all laboratories obtain similar results ring testing of common samples is being used. To previous work on ovine nematodes we have added ring testing of bovine nematodes (*Ostertagia ostertagi*) confirming that the EHT works well. As there is already widespread benzimidazole resistance in New Zealand cattle, a reliable test that can be used in the EU will be of value. Ring testing is proceeding with the LDT but reliability problems still have to be overcome. A standard operating procedure (SOP) will then be written to ensure results in different laboratories are comparable. Other new tests including PCR tests for benzimidazole resistance will be evaluated. Once these tests are finalised new recommendations on how to conduct field surveys for anthelmintic resistance will be produced so that results are comparable in all EU countries and on a world basis. The end result will be a great improvement in the practical detection of anthelmintic resistance in ovine and bovine nematodes.