

2007 - Progress Report Workpackage 2

The overall objective of **WP 2** is to evaluate techniques for herd/individual health monitoring and TST aimed at reducing the use of anthelmintics in cattle. The 4 countries involved in this WP are Belgium, Germany, Sweden and the UK. The workpackage is subdivided into 3 parts:

- WP 2.1 The use of pepsinogen assays and TST for first-season grazing (FSG) cattle;
- WP 2.2 Development and use of a milk *Ostertagia ostertagi* antibody test (ELISA);
- WP 2.3 Identification of heavily infected FSG calves by independent non-invasive techniques.

In **WP 2.1** a serum pepsinogen assay to evaluate gastrointestinal nematode infections in FSG cattle was evaluated. A protocol for the assay was developed and a ring-test was performed using 104 samples, repeatedly tested in the different countries. The ring-test revealed that important and unacceptable differences existed between the results of different laboratories. Further steps are currently undertaken to obtain a better agreement between the results from the different laboratories. A questionnaire-survey was performed on 393 farms. Blood samples were collected from 6-10 FSG cattle per farm and information was obtained on management factors and anthelmintic treatment strategy. It was found that in general, the level of infection with gastrointestinal nematodes of FSG cattle was very low. This could be ascribed to an intensive use of anthelmintic drugs in combination with a protective pasture management. Based on the serum pepsinogen levels and information on pasture management, advice is given to farmers and veterinarians to target anthelmintic treatments to the herds with the highest levels of infection and thus probable production losses and to avoid excessive use of anthelmintics in herds with a low level of infection.

In **WP 2.2** an *O. ostertagi* milk ELISA to evaluate gastrointestinal nematode infections in adult dairy cows is being evaluated. A ring-test has been performed 80 milk samples have been repeatedly tested in 4 different laboratories. It was concluded that the repeatability and reproducibility of the ELISA were high and that it is suitable for further development to a commercial assay. The ELISA was used to analyze bulk tank milk samples from ≥ 500 herds per country. Information on pasture management and anthelmintic treatment strategy has been obtained from these farms through a questionnaire and approximately 30% of the farmers have responded. Based on the ELISA results, the exposure of the adult dairy herd to gastrointestinal

nematodes was generally high. On a limited number of farms, bulk tank milk samples, individual cow milk and/or blood from the first-season grazing calves were collected to compare the ELISA results on bulk-milk with the results on individual samples and to assess possible relationships between the level of infection of FSG calves with that of the milking herd.

In **WP 2.3** a retrospective study has been carried out to analyze the possibility of using daily weight gains (DWg's) in FSG cattle as a marker for treatment decisions to prevent gastrointestinal induced production losses. The dataset we used contained live-weight, faecal eggs counts, serum pepsinogen levels and serum anti-*O. ostertagi* antibody levels of FSG cattle from more than 2300 data points from ≈330 FSG steers collected in 3 independent long-term grazing trials in Sweden. Some general conclusions so far are that significant differences in DWgs were observed depending on the control level achieved (≈200 g/day). There were also good linear correlations between DWg's during the entire grazing season. It seems like faecal egg counts are a reliable marker early during the grazing season, whereas serum pepsinogen and anti-*O. ostertagi* antibody levels work better later on. The relevant mean fecal egg counts and serum pepsinogen levels were significantly higher in animals with a poor performance. Overall, to base a treatment decision on DWgs in FSG cattle seems possible, if we accept that some animals will be dewormed without a cause. In Germany, a 3-dimensional camera-system is being evaluated to automatically measure the body condition score of cattle.