Fasciola diagnostics

In the August 29 issue of WormMail, we discussed various methods (incl. various flotation solutions) of counting nematode and trematode eggs and also the proportion of fluke eggs recovered from faeces using flotation or sedimentation methods. In short, roughly 30-40% were recovered with sedimentation techniques and somewhat fewer with flotation using potassium mercurioiodide (which has safety issues as well). (Yes, I know one reader will be checking my spelling of flo(a)tation).

Two Western Australian (WA) parasitologists offered feedback which appears below.

“The poor recovery of liver fluke eggs in the sedimentation test has of course been known as a major limitation for many years - especially for WA, where we need to confirm introduced animals are negative on entry to preserve our (very rare) Fasciola-free status. We have recently moved to a ELISA test as the primary test, after validation and modification of interpretation criteria to ensure maximum sensitivity (good work by Dieter Palmer, Jill Lyon et al- see recent AVJ paper). No good for horses, but at least we now have a very sensitive test for sheep and cattle, at a time that resistance to triclabendazole is increasingly a concern.”

Regarding the ELISA: “It has been used for a little while, but the modifications specific to host species increase its accuracy.”

Brown Besier | Principal Veterinary Parasitologist
Department of Agriculture and Food, Albany, Western Australia

Excerpt: “Using the cut-off recommended by the kit manufacturer, the specificity was 100% for all species and the sensitivity was 88%, 80% and 9% for sheep, cattle and horses, respectively. Using the lower custom cut-offs for each species improved the sensitivity to 100% for sheep, 87% for cattle and 28% for horses, while maintaining the specificity above 99% for all species.

The sensitivity of the commercial copro-antigen ELISA can be improved by using custom cut-off values for each species. With this modification, it is a suitable alternative screening test to the currently used sedimentation test for border control of sheep and cattle movement. The test is not suitable for use in horses.” (Read the full paper).

Fasciola diagnostics and flotation solutions in general

“Hi Steve,

“The use of flotation solution in parasitology is an interesting one. In the early days of veterinary diagnostic parasitology every possible solution was tried. Old manuals and publications often make interesting reading in this respect. I recently came across a method (can’t remember in which publication) where sodium silicate solution (D 1.39 g/ml) was used and recommended for fluke eggs. I remember my dad showing me as a boy how to fix leaking head gaskets on motor bikes with water glass (sodium silicate solution).

“Anyway, what I am trying to say is that most of our ideas are not so new and the existing methods are there for a reason. Nevertheless, we (or some of us) cannot help ourselves and have to tinker with it again -- which I did, but not really in a scientific manner. I found the same as Boray and others, that unless somebody can come up with an osmotically inactive high density solution (water glass is not one of them!!!!) the fluke eggs will shrivel up and then very hard to detect. Dropping them back into water will make most of them pop and the shells are also hard to see. I also found that a lot of eggs never make it to the top of the flotation solutions, which explains the poor recovery rate. I don’t understand why this is happening but it must have something to do with the viscosity of the flotation solution. Viscosity could also explain why there are so many different recommended flotation solutions (of almost identical densities) for different parasites. Cringoli (2010) compared different solutions for different parasite eggs but states that it also depends on the method used. For the FLOTAC method they found saturated magnesium sulphate not suitable but sat. zinc sulphate suitable for fluke eggs. The other high density solutions (mercury) tried by Cringoli have unacceptable OHS (health and safety) risks. The Cringoli paper does not state the sensitivity of the method or solutions.
“I have taken the water glass solution home (just in case the head gasket of the lawn mower blows….. !!) and we continue to use the sedimentation method in our laboratories for species other than cattle and sheep. Rapsch (2006) showed that the sensitivity of sedimentation method can be improved by processing larger faecal samples (3x 10g).”

Dieter Palmer | Senior Veterinary Parasitologist
Animal Health Laboratories
Department of Agriculture and Food, South Perth, Western Australia


**FAMACHA®**

Most of you know about FAMACHA. Here is some information from Wikipedia:

“The FAMACHA method of selective treatment was developed by three South African researchers (Drs Francois Malan, Gareth Bath and Jan van Wyk) against the backdrop of major anthelmintic resistance in South Africa. However, the method has since been implemented successfully in various locations around the world.”


I am pleased to say that both Drs Faffa Malan and Jan van Wyk are on the WormMail mailing list. Only the best people are. ☺

**NAPfix® - Jurox**

Recent advice from Jurox: “Our QA team have been working on NAPfix and at this stage I don’t have an answer on the time frame when we will have NAPfix back on the market”.

In July this year there was a voluntary, non-urgent recall of same batches of Napfix (naphthalophos+abamectin+BZ) by Jurox who found there were enough drums (though apparently a small number) from a small but sufficient number of batches that were not re-suspending sufficiently well after shaking. There was inconsistency in how the product re-suspended after varying times and storage conditions in the field.
"I’d like to know whether ..... anyone can add more information about **when the first non-herbal anthelmintics** were produced. A search of the literature seems to point to the Onderstepoort Veterinary Institute in South Africa as the first producer of a non-herbal anthelmintic, when Green (1918) and Veglia (1918) developed the so-called "Government Wireworm Remedy" consisting of **arsenic and CuSO₄** (Veglia, 1918, Chemotherapy of haemonchosis in sheep. The 5th & 6th Reports of the Director of Veterinary Research, Union of South Africa, 377-482).

As an aside: in 1915 Veglia also published an extremely comprehensive 100+ page article on the life cycle of Haemonchus contortus, for which I still receive requests for reprints every now and again (amongst others also by Paul Presidente not long before he died).

However by 1912 the above articles were preceded by two pamphlets by Sir Arnold Theiler (after whom the Theileria spp. parasites and thus theileriosis were named), describing the use of arsenic and CuSO₄ for haemonchosis (Theiler, A., 1912a. Experiments to determine the safe dose of white arsenic, Cooper's Dip and bluestone for sheep. South African Agricultural Journal, March 1912, Bulletin No. 17: 31pp; Theiler, A., 1912b. Voorlopig rapport omtrent het ingeven van Cooper's Dip en blaausteen aan schapen op een zuurveldplaats. Landbouw Journaal van de Unie van Zuid-Afrika, Augustus 1212, Bulletin No. 48: 14pp).

In 1935 Mönnig published results on the use a mixture of **copper arsenate and copper tartrate** for oesophagostomosis, marketed as the "Onderstepoort Knoppieswurmmiddel" / "Onderstepoort Nodular Worm Remedy", which was in use in the country until the 1960s.

Very interesting is that Theiler (1912) seems to be the first to have recommended the use of the "treat-&-move" approach to worm control when he predicted that to treat sheep with "Government Wireworm Remedy" immediately before a move to pasture that had been without small ruminants for a year would **eradicate** H. contortus.

Something else which may not be generally known is that the widely used textbook, "**Helminths, Arthropods and Protozoa of Domesticated Animals**" by **Soulsby**, first appeared as "Veterinary Helminthology and Entomology" (first edition 1934), by H.O. Mönnig, whom you quote in your letter, and who was one of the first helminthologists at Onderstepoort Veterinary Institute in South Africa (a close look at most drawings in the Soulsby book will reveal "HOM" on a large number of them)."

(Emphases above are mine, except for ‘eradicate’).
My copy (6th Ed., 1968) of Soulsby appends ‘Mönnig’ to the title. Editions 1 (1934) to 5 including reprints (1965) are attributed to H.O. Mönnig (1897-1978), with editions 4 (1956) and 5 including reprints (1965) revised by Geoffrey Lapage, and the 6th edition (1968) revised by E.J.L Soulsby (Baron Soulsby of Swaffham Prior (Lord Soulsby to his friends)). Mönnig in his preface to the 1st Edition) says the reason he produced the text was because there had been no adequate text since Neumann’s ‘Parasites and Parasitic Diseases of Domesticated Animals’ of 1892.

NSW DPI - three Primefacts on grass tetany

Here is one:


What’s in a name: Eucalyptus sideroxylon

Eucalyptus sideroxylon (“Ironbark”). From Greek, eu = well and calyptos = covered, referring to the cap which covers the developing flowers. Sideroxylon = having wood like iron. http://anpsa.org.au/e-sider.html

Regards,
SL, 2014-09-15
NSW DPI Armidale NSW 2351
E&oe.

“I work with parasites, and help people with worms”