The New Zealand Society for Parasitology

NEWSLETTER MARCH 2013

http://nzsp.science.org.nz

FROM THE PRESIDENT

Today I was reacquainted with that rare phenomenon, rainfall. It was the kind of rain that falls so heavily that you don't so much feel that you are getting soaked, rather that you are getting mugged! Nevertheless, it has been a long time coming. Let's hope there is more to come. Visitors to New Zealand this summer will no doubt have enjoyed the dry conditions, and amongst those hitting our shores were delegates of the 8th International Sheep Veterinary Congress held in Rotorua at the end of February. Not surprisingly there were a fair few of the Society's members present in Rotorua, and as international conferences go, it is almost certainly one of the most sociable! Well done to Dave Leathwick who was one of the conference's keynote speakers.

Those of you with time enough to watch television, and I know you are all far too busy to do that, may have caught the recently aired episode of Stephen Fry's Qi, 'H for Horrible', in which the parasite *Cymothoa exigua* (below) featured. Truly a nightmare parasite. I am checking myself regularly!

I did have a personal run in with parasites recently when after 3 doses of a wormer one of my new puppies was still shedding large numbers of *Toxocara* eggs! Parasites! You can't get away from them!

At Massey, the students have descended in droves, reminding me that pathogenicity is often linked to burden. But it's what they pay me for! May 2013 be a successful year for you all.

Ian

Executive

President:	Ian Scott	I.Scott@massey.ac.nz
Vice President:	Victoria Chapman	Victoria.chapman@pfizer.com
Treasurer:	David Heath	David.heath@agresearch.co.nz
Secretary:	Caroline Costall	caroline.costall@agresearch.co.nz

New uses for old anthelmintics

They may not kill worms very much anymore, but they may still have a place on the pharmacy shelf. Thiabendazole has been shown to be a vascular disrupting agent capable of slowing tumour growth (http:///www.plosbiology.org/article/info:doi/10.1371/journal.pbio.1001379). But before you start self-dosing with a daily dose of sheep drench, be aware that thiabendazole's thiazole group is probably pivotal for this effect.

NEW MEMBERS

Joanna Roberts

I joined the Parasitology team in the Animal Nutrition and Health Group at AgResearch, Grasslands, in 2010 as a flow cytometry specialist. Since joining this team, I have had the opportunity to learn a little about the enormous field of parasitology, particularly with respect to various livestock parasites and their impact and role in animal health. What I am really looking forward to is an excuse to put parasites into the flow cytometer but for now I am enjoying studying the interactions between parasites and their hosts' immune systems which flow cytometry provides an excellent tool kit to do. Prior to joining AgResearch, I was head of the Flow Cytometry Platform at the Swiss Federal Institute of Technology/Ecole Polytechnique Federale de Lausanne in Switzerland. Before this, I was Staff Scientist responsible for flow cytometry at the Malaghan Institute of Medical Research in Wellington. I thoroughly enjoyed the NZSP meeting in Blenheim in October.

Sarah Lochore

Microbiology and Parasitology laboratory technician at New Zealand Veterinary Pathology (NZVP). Graduated with a Bachelor of Medical Laboratory Science from Massey University in 2010. Have worked in both human and animal health laboratories doing a range of testing. Currently completing a Masters in Veterinary Science in parasitology through Massey University, which is sponsored by NZVP.

Richard Scott

I was raised on a sheep and beef farm near the Kaimai summit and got my BSc degree at Massey University. I started at AgResearch in 1989, and in 1992 moved to the UK for nine years where I gained my PhD in a project on GE sugar beet. In 2001 I returned to NZ for a two year fellowship at Massey University, before moving across the road to AgResearch and the same lab bench I had left 11 years earlier. I have spent the last nine years working on successfully developing high energy forages using transgenic technology. In 2012 I was shoulder-tapped to be the Team Leader for Parasitology at AgResearch. The role is primarily administrative, but I do enjoy being involved in the discussions around designing science work programmes to ensure that the results will bring value to the agricultural industry.

RESIGNATIONS

Tom Watson

Tom has taken up the Technical Support Manager, Livestock position with Zoetis in West Ryde, New South Wales.

CONFERENCE 2012

This article by Richard Campbell was abstracted from the New Zealand Veterinary Pathology newsletter **Synapse, Issue 53 (February 2013).** Food for thought for future conferences.

A CONFERENCE BELOW THE RADAR

Along with two colleagues I attended the recent New Zealand Society for Parasitology Conference. As is always the case the programme was a very interesting mixture of applied science and case studies underpinned by several research based presentations. The event also celebrated the 40th birthday of the society and provided a great atmosphere for renewing and establishing the all important people connections. All in all I take my hat off to the organisers for a great conference.

It very quickly struck me that the veterinary profession was drastically under represented with just three practices having people there. Parasitology has always been and will remain the most economically important animal health issue for New Zealand pastoral farmers. The veterinary profession must remain fully abreast of current developments and emerging work if it is to retain the ability to fully support their farming clients. That is not to mention the importance of anthelmintic sales to the viability of rural practices.

In my travels I hear a lot of angst from the veterinary profession about non-veterinary retailers and the tactics they use to chip away at the drench market share previously held by veterinarians. It was then interesting to note both Ravensdown and PGGW in attendance at the conference. I don't think anyone can complain if staying scientifically informed is one of the tactics they do employ.

Having praised the society for the quality of the event I would also challenge them to do better in promoting it. Unlike a NZVA conference they do not have the luxury of administrative people to undertake the conference organisation or the resources to employ a professional agency. They are reliant on a small group of enthusiasts who also happen to be very busy researchers and lecturers. The consequence of this is that the programme barely precedes the event. Veterinary businesses can not be expected to commit money to travel, accommodation and registrations without prior knowledge of the content.

Should the society find a solution to this conundrum they would fully deserve far greater support from the veterinary profession.

Richard Campbell

CONFERENCE 2013

Dates: Sunday 20 October – Tuesday 22 October 2013

Venue: Massey University Sport and Rugby Institute
http://www.sportandrugbyinstitute.co.nz/

Organising committee - Tania Waghorn, Laryssa Howe and Caroline Costall.

SUBS REMINDER

The annual subscription of $20.00 for ordinary membership is due.

Please make cheques payable to **'The New Zealand Society for Parasitology'**

Cheques can be sent to the Secretary:

Direct transfer details: NZ Society for Parasitology Inc, West Pac, 03 0774 0857331-01

Members are welcome to contact Caroline if they're unsure if they've made payment.

Phone: 06 351 8685

Email: caroline.costall@agresearch.co.nz

Caroline Costall
AgResearch Ltd
Grasslands Research Centre
Tennent Drive
Private Bag 11008
Palmerston North 4442
New Zealand

THANK YOU FROM JUDY YEATES

Dear Colin and members of the New Zealand Society for Parasitology

Thank you so much for the card and condolences you sent when Gregor died last August. It was very kind and most appreciated

Gregor always enjoyed your annual conferences as he felt the Society was the one in New Zealand most closely connected with his main line of work. Also, the people in the Society stimulated ideas and were always friendly.

Gregor died far too young as he was really enjoying his retirement - making a start on his long list of projects he had lined up.

My apologies for the delay in writing, but until recently, I haven't felt like writing to anyone

Kind Regards

Judy Yeates

P.S. The family and I really appreciated your August Newsletter which you dedicated to Gregor. Whoever put it together did a wonderful job

Extension key to limit resistance

PAM TIPA
pamelat@ruralnews.co.nz

GETTING DRENCH resistance mitigation measures integrated into farm practice is the challenge now, more so than developing mitigation measures themselves, says a world-renowned expert on the problem.

"As a science group we are starting to move away from the problems of anthelmintic resistance and management of sheep," Agresearch's Dave Leathwick told the recent International Sheep Vet Congress in Rotorua.

"We think we have delivered to industry many of the tools they need and the problem ahead for New Zealand is one of extension and adoption," he concluded.

Leathwick says field trials have shown anthelmintic resistance resulting in a 10-14% loss in lamb carcass value. It also results in lower condition score, less wool, carry over effects to adults and more dags.

However, a pertinent point from some New Zealand trials is that sometimes there are no visible signs in the animals, he warns.

"Farmers think they will see a drench resistance problem in the performance on their stock and that is not true – they will see it eventually but it is not visible until it gets really bad," he told an audience of about 400 vets, about half of whom were international visitors.

Leathwick's aim in his keynote address to the conference was to outline the 20-25 years of "everyone's work" on anthelmintic resistance in New Zealand.

When the first case was detected in 1979 "resistance was regarded as a little interesting but no one really cared", he says.

Severity and prevalence increased to the year 2000 when there was a particular "wake-up call" and 80 farms were screened for drug resistance.

"The surprise was the prevalence of resistance to anthelmintic which nobody had expected or seen. It motivated a significant increase in action by industry."

In "the dark old ages", advice to farmers was contradictory, based on what people thought, with a smattering of commercial self-interest, he says. There was confusion because farmers were being told to do five different things.

Today, 20 years' research provides recommendations to farmers based on good peer-reviewed science.

Results from a 2004-5 survey of 80 sheep farms were used by Leathwick in modelling to answer the question: should drenches be used in alternations or combinations? Combinations came out far superior.

Unlike anywhere else, these modelling results have been field-tested in New Zealand in expensive trials: the last three-year one cost $1.8 million, he notes.

Mini-farmlet systems were used and pastures contaminated with mixtures of parasites known to be prone to developing drug resistance. These were then managed to suit the site and evolution of drug resistance measured in real time.

What they found was a considerable disparity in resistance development with different treatment practices. For instance the use of a 100-day capsule accelerated resistance development in three different parasites.

Leathwick says he's sure the ISVC audience had all heard about maintaining refugia – "you've got to have some susceptible worms on the farm. If you don't – the alternative is to have nothing but resistant worms," he commented.

But one of the questions farmers ask all the time is 'how much refugia do I need', he says.

A key factor in answering that is the efficacy of the anthelmintic.

"As the efficacy of the drench goes down your ability to dilute the resistance becomes almost nil. So if you have at treatment which is 99% effective and you leave 1% of animals untreated you get a 10 fold dilution. But if you've got a drench that is only 95% effective you have to leave 34% of the flock untreated to get the same dilution.

"So, if someone asks how many animals shall I leave untreated the first thing you say is how effective is the drench you are using? If they can't tell you then you have to say 'I don't know'.

"But this brings us on to the concept of using combination drugs. If 90% is treated with an anthelmintic which is 98% effective, the calculated dilution ratio is just under 5%. But if we use two anthelmintics which are 98% effective, the dilution ratio is more than 100% which is a massive difference in terms of diluting the resistance.

"This is the argument for using combinations to

TO PAGE 48 »

Rural News, New Zealand
19 Mar 2013, by Pam Tipa

General News, page 47 - 575.00 cm²
NZ Rural - circulation 80,767 (Fortnightly)

ID 00185998871

Delegates at the recent International Sheep Vet Congress mingle after Dave Leathwick's paper.

Combinations shown to slow build up

» FROM PAGE 47

slow the development of resistance."

Leathwick says when this science started coming out, commercial companies responded with combination products. "So the drench companies looked at what was coming out of the science and what people were looking for and they started producing the products.

Dave Leathwick

"We have a raft of combination anthelmintics in this country and you would struggle to go to many retailers in this country and find a single active (drench) on the bench.

"That is a direct consequence of science and industry working together to produce the products we need. We've got the first triple combination, we're the first in the world with new actives and there's wide acceptance across all the industry of using these tools to slow the development of resistance."

"We've got the first triple combination, we're the first in the world with new actives and there's wide acceptance across all the industry of using these tools to slow the development of resistance."

In 1999 an industry mentor group was set up with farmers, vets, ag consultants and scientists from other organisations to advise, critique and ensure the practicality of what Leathwick and his colleagues were doing.

"There is absolutely no point in producing a solution that nobody wants.... because nobody will use it and academics are really bad at this. They sit in ivory towers and produce solutions that farmers don't really want."

Historically researchers lacked connectedness with farmers and strategies developed through research had never been implemented on commercial farms, he notes.

However, about four years ago case studies were set up on 20 farms using best practice science recommendations to combat resistance. It has been a learning curve for everyone, he admits.

The results show no worsening of resistance and in some cases improvement.

In summing up, Leathwick says New Zealand has a portfolio of evidence-based recommendations to combat drench resistance, supported by significant investment in science.

"We have a lot of confidence in those recommendations."

Strong involvement and input by the industry the whole way through the development of those was key, as they have been evaluated in an absolute practical sense on farm, he adds.