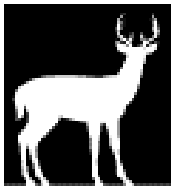
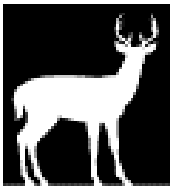
Otago Branch NZDFA



Newsletter Update August 2002



Message from the Chairman

With Otago being such a geographically diverse province it has been in the past difficult to maintain the continuity and focus of the branch. The recent Branch meeting elicited some new energy and faces with us all looking to reach top speed shortly! We are well represented within the steering committee from all the regions and this should help to ensure each areas interests and concerns are covered. A list of contacts is provided elsewhere in this newsletter. If there is anyone who would like to be involved or has an offer of support please contact one of the members.

The focus is on production and improved returns to the farmer. There is a wealth of new material that is available to farmers from the Deermaster and Richmond projects amongst others that can help improve production results in all systems. I see one of the main roles of the Branch as being involved in the dissemination of this information. The other production aspect is to limit the risks to deer production such as Johnes Disease and TB.

The branch congratulates Tony Pearse on his new appointment with the NZGIB as the Producer Executive (shortly to become Deer Industry NZ, DINZ). He will be at the seminar in Alexandra to meet farmers and discuss his new role. We also pass on our thanks for the huge amount of work that Tony has done both in Otago and for the deer industry on a national level. Chris Johnson is stepping down from his position as secretary/treasurer and has provided a lot of support to the branch – thank you Chris.

I would like to reiterate Tony's comments at the AGM and 'acknowledge the highly visible industry leadership of NZDFA President John Scurr, NZGIB Chairman Clive Jermy'. We have now moved to one industry body with both John and Clive remaining involved.

Please take particular note of:

- **Protect your herd health seminar, Aug 29, 2-5.30pm**. This will be a very practical and useful update on Tb and Johnes disease with the experts speaking. The seminar also refreshes and updates on drenches, vaccines and trace elements. All deer farmers and any associated industry people are welcome.

- **Johnes Disease** has increased in incidence over the last 5 years with significant differences being exhibited in deer herds compared to sheep and cattle. The main concern is the effect on 8 to 15 month old animals with up to 20% of this age group dying. It obviously can have a large impact on the bottom line. The farmers of the South Canterbury-North Otago Deer Branch have initiated the formation of the Johnes Research Group which your branch and two others have joined. Material outlining the aims of the group and a background on the disease are attached to the newsletter. Please pass on any comments to a member of the Otago Branch steering committee.

- **Velvet:** It is becoming increasingly important to follow the velveting guidelines with a review of the Animal Welfare Codes later this year and MAF looking to become involved in the storage of velvet.

There are two local farmer discussion groups in Otago. South Otago who run a velvet competition in November (see details elsewhere) and the newly formed East Otago discussion group with 29 members. Contact the chair John Morgan (03 4657239) if you are interested in joining this group. They have several field days on feeding systems planned for the spring.

Ag Census Brochure

MAF and Statistics NZ will be sending out a census on agricultural production. This is the first census undertaken in a number of years.

It is important that deer farmers are aware of the census and provide good, accurate information on deer numbers. The information is needed to better establish the industry size and to assist with production forecasts. Without good information on herd numbers we are severely limited in our ability to forecast and plan. In turn this limits the ability to provide meaningful and timely information back to producers.

E-mail addresses

The Branch is looking to update its current register of members with particular reference to e-mail addresses. If you would like to receive information via e-mail more regularly please e-mail either Sue at the GIB sue.lindsay@nzgib.org.nz.

Mandy Bell

Otago Branch who's who

Current members of the steering committee are as follows:

Mandy Bell 03 443 4250
Paul Mutch 03 467 5479
John Scally.....03 465 7375
Ken Harrex.....03 485 9514
Tony Pearse.....04 381 6016
Phil Hunt 03 443 1055
Peter Foster 03 465 7838
John Falconer 03 444 7501
John Scurr.....03 443 7555
Mike Scurr.....03 443 7780

NZGIB
Tony Pearse (Producer Executive) 03 489 9221
John Scurr (Council) 03 443 7555
Clive Jermy (Council).....03 465 1022

RAHC
Core Members
Graham Clarke, NZ Fed Farmers Meat & Fibre (Chairman).....03 205 8813
Stephen Korteweb, NZ Fed Farmers Dairy.....03 413 9556
Doug Brown, Otago Regional Council 03 439 5693
Mandy Bell, NZ Deer Farmers Assn 03 443 4250
Peter Foster, NZ Deer Farmers Assn 03 465 7838

Area Members
Stephen Woodhead, South Otago (Deputy Chairman).....03 417 4733
Phill Hunt, Central Otago (Queenstown Lakes District) 03 443 1055
Michael Lord, East Otago (Dunedin City) 03 486 2730
Phillip Smith Central Otago (Central Otago District) 03 444 9626
Bill Pile, North Otago (Waitaki District).....03 431 3768

This newsletter is kindly sponsored by Otago Venison and The Otago Deer Transport Company Ltd.

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OR (A.H.) 03-465 7375
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COMPETITIVE SCHEDULE RATES

Tb Updates

The overall trends are down which is positive for the region but there have been recent outbreaks to the dismay of all. Over 90% of outbreaks are vector related so control on farm of possums and ferrets are crucial. Brent Paterson from Agriqual is talking on August 29 on this subject.

Tb Vector Risk Areas (VRA)

Deer	"I" Herds 24 June 2001	"I" Herds 24 June 2002
South Otago	6	4
East Otago	13	12
Central Otago	10	6
West Otago	0	0
Total	**29**	**22**

Tb Vector Free Areas (VFA)

Deer	"I" Herds 24 June 2001	"I" Herds 24 June 2002
South Otago	1	0
East Otago	6	1
Central Otago	2	0
West Otago	0	1
Total	**9**	**2**

The Tb testing rules have changed for short-term grazing.

A new Animal Health Board policy will allow farmers who send cattle and deer into Tb Movement Control Areas for short-term grazing, to apply for an exemption from pre-movement Tb testing when bringing their stock home. Exemptions will be considered only in situations where there is no change of ownership and the cattle or deer have been grazed separately from other cattle or deer while in the Movement Control Area. Short term grazing is defined as less than 90 days.

Stock which are moved under the new exemption will have to be Tb tested after they have returned to the home herd. Tb testing will also be required for any cattle or deer with which they have been in contact after their return. If the home farm is outside a Movement Control Area, movement control restrictions will be placed on the herd until a clear result is obtained at the post-movement test. The Tb status of the home herd will not change unless infection is found.

All exemptions will be managed by way of an application for a permit to move the stock under exemption. Applications for permits must be made to local offices of AgriQuality NZ. VTO's will shortly be formally notified of this variation on the National Tb Operational Plan.

Gary Knowles has a new role with the Animal Health Board as the National Disease Control Manager, Southern Territory. His contact number is 03 440 2087.

Thank you very much to John Scally for all his work on behalf of the Otago deer farmers with RAHC over the past few years. The new deer representative is Mandy Bell (Wanaka) with Peter Foster (Waikouaiti) as a backup. This will enable the deer industry to have no down time in representation.

Amanda Bell

Branch Discussion

Concerns on accuracy and consistency of weighing stock

Peter Foster at the recent Otago Branch meeting raised the issue of fairness and accuracy of the practice of stock truck weighing and calculation of an average weaning weight in stock sales using this technique.

Variations in where weigh scales were relative to the property, distance travelled and time ex farm were all highly variable

Q1: Was there a standard time off feed or procedure in any of the QA transport or stock agent codes.

Q2: Was there a standard curve of weight loss over time for weaner stock off pasture to destination, or some balance of time weighed intermediate to travel from farm – farm, etc.

It was suggested that a 4 hours off feed as part of the venison code could be applied. Venison yield research suggested a relatively linear loss for 16 hours to be ~3% LWT off grass then relative fasted stability although temperature conditions could affect the water balance.

Web Sites

DEEResearch: The DEEResearch website, including the DeerSearch electronic library of research papers, is live from 1 August www.DEEResearch.org.nz. It already has a few hundred research papers and articles relating to deer farming for you to access. Hundreds more will be added in the next few months so keep going back. You can also sign-up to receive email updates of new papers added to the site. You should be sent login and password details with the August issue of Market Report. If you have any problems logging in please email DEEResearch@nzgib.org.nz.

Federation of European Deer Farmers: http://www.fedfa.com. Information from the various European deer farming associations that make up the Federation. Note the various organisations' policies on indoor housing, welfare and the environment.

The Deer Farmer Magazine: http://www.deerfarmer.co.nz. The website of the industry's independent deer industry magazine. Full of useful information and links.

Deer Notes

Deer Notes relay current events and developments in the deer industry from the GIB CEO, MJ Loza. If you would like to receive them please e-mail MJ at mj.loza@nzgib.org.nz

Previous issues of Deer Notes can be downloaded from the GIB Website at the following address:
http://www.nzgib.org.nz/ne/index.cfm?ToPage=../Downloads.cfm

Some of the material for this newsletter is sourced from the Deer Notes.

Velveting

A reminder from the GIB.

It's almost that time of year again – time to start thinking about velveting.

We all know the welfare issues associated with velvet removal, so it's critical not just that we do things right, but that we can prove we do things right. The NVSB programme helps us achieve this. The requirements aren't 'made up' for the sake of it, they are all critical to ensuring farmers can maintain access to velveting drugs and can continue to remove velvet.

Please keep the following dates and requirements in mind:

1 September '02	Drug Record Books and Invoices for annual fees will be sent out
20 October '02	Payment of annual fees due
15 December '02	Supervisory Vet visit must be completed
31 March '03	Drug Record Books and drugs to be returned to vets

Remember:

- Velvet removal is a privilege not a right. We must all meet the requirements of the NVSB programme to keep this privilege.
- Non-compliance with the NVSB programme puts our whole industry at risk.
- Velvet is a health food and should be removed, handled and stored in a clean and hygienic manner

MAF – Proposed regulation of velvet

As part of moves to the Animal Products Act, MAF is proposing to begin requiring registration of places where velvet is stored immediately prior to going to a primary processor. This definition focuses on freezers and will include pools and most road buyers.

Pools and road buyers are opposed to the move it will increase compliance costs for very little benefit (if any) to the industry and their customers. The GIB is also very concerned because it signals a movement by MAF to regulate back through the supply chain toward farms.

As the present time it appears that there have been no problems relating to velvet depots and risks are managed at pool and primary processor level.

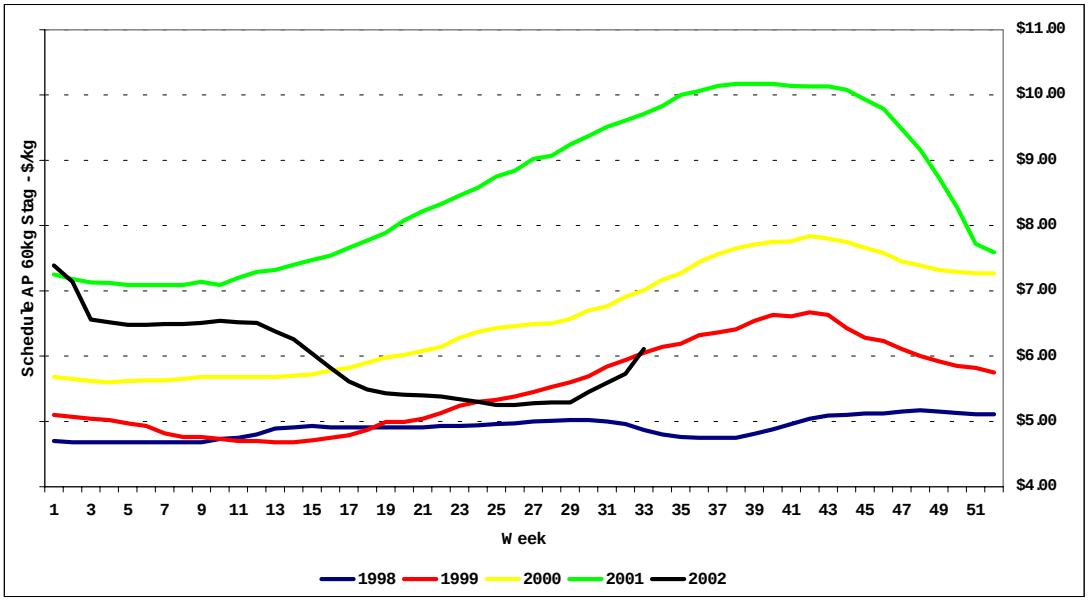
A meeting between pools, road buyers and MAF is being arranged but this is a good example of the need for the industry to make sure it can deliver on requirements of food safety and hygiene itself – MAF regulation is likely if we can't or don't.

For more information contact Mark O'Connor: mark.oconnor@nzgib.org.nz.

Venison Schedule as at 12.8.02

This week (week 33): $6.11 (up 38c on last week)
Down 9.5% on the 5 year average for this time of year ($6.75)

60kg AP Stag – Published National Schedule.



GIB News

Most discussion centres on the kill patterns and the record low kills. Even with a marked increase in schedule in the last 2 weeks slaughter patterns remain confused. The message seems to be that pricing is uncertain after October and the industry needs managed and consistent supply for the season not a huge ramp up of only slightly heavier carcases in late summer.

These reports that feature schedule trends come as DEER Notes, a 2-weekly bullet point update by email from the NZGIB.

Re velvet. Market indications appear settled at the end of what has been a productive season with good quality gains on farm. There is little new to report since the NZGIB FGM notes were sent to all levy payers in mid-June.

- Sue Lindsay and John Tacon are in the process of sending out seasons velvet tags and invoices for on farm accredited velvetters.

Producer Executive News

Producer Executive update

Almost thankfully after endless embarrassingly glowing newspaper and magazine and even TV news articles about the Producer Executive position and the large task ahead I was able to travel to Wellington on 5th August and begin the role of representing DFA branches and producers. The Executive Staff at the GIB have been carrying the NZDFA responsibility extremely effectively and is a sign of the efficiency and dedication of MJ Loza and the team.

Immediate tasks are developing an industry submission on the draft National Science Strategy Committee's extended research plans for the Possum and Bovine Tuberculosis Control programme. This is strongly linked to the AHB National Tb freedom programme (0.2% infected cattle and deer herds by 2012/3).

Nationally other projects commenced include formulation of a co-ordinated education and training approach to velvet antler competition judging at national and local level, including best practice methods of displaying and judging velvet and explaining in competition what judges are looking for in the defined classes of calcification, symmetry, balance, uniformity, the wow factor etc.

There is also a lot of activity in the 3 SFF projects, DeerSearch, the online internet search library for technical papers and research work, the Landcare sustainability manual and the national Benchmarking and performance recording programmes.

Planning in co-ordinating branch activities around the country is underway. There are a variety of interesting approaches in local activity we could well adapt.

Marlborough are running an on farm competition on farm management and stock appearance and performance with a meeting and meal at night. Gisborne-Poverty Bay invested in weaners some time ago and will slaughter and run a carcase competition in Sept at peak schedule as an education tool and significant fund raiser. Waikato are about to tour the Otago Southland region including Minaret and the Fallow Deer Society are holding a field day at Sam Pyes property in Cave at the end of August. A number of other branches are well down the track to developing velvet antler competitions and spring summer events.

Important amongst these are the Grasslands Conference at Lincoln University on the 8th and 9th of November co hosted in a Saturday 9th field day by the Canterbury Branch. This in depth seminar will feature deer nutrition exclusively in the form of practical deer nutrition papers and written up to date research reviews on growth and pasture species, followed by practical demonstrations at 2 leading Canterbury finishing and velvet antler properties.

Otago under the new leadership of Mandy Bell and a new face committee hit the ground running with the herd health seminar on 29th August and then in combination with the South Canterbury Branch co host with Stanfields Bushey Park the major velvet antler production seminar on Sept 17th at Bushey Park.

The point being as far as the PE position is aimed that branch activity and support, promotion and adding value for producers is what the NZDFA branches are all about. The new structure is about producer representation not the demise of the NZDFA as may have been the impression. The Branches need your support through the membership of the NZDFA with $15 of that subscription of $30 being remitted back to Otago branch for developing activities as outlined.

The PE position is dedicated to that support and understanding issues and concerns. Please feel free to contact me at any time.

I have relocated to an office at AgResearch Invermay
Work: 03 489 9221
mobile 021 719 038
home 03 481 7077 (Julie is my wife and often answerer) or tony.pearse@nzgib.org.nz.

Tony Pearse

Events in the Pipeline

Deer Farmer of the Year Competition

This significant event is on again this year with a major advance. We are to join forces with Southland to add to the size and scope of the event and to encourage more entries and a bit more parochial competition. Talks are being held with the existing sponsors as of right and a pan branch committee has been formed to create the event that has become a significant part of southern deer farming. Calls for entries are to be made by the end of the month with judging in the mid-spring late-Sept, early October period. We plan to have a combined Otago Southland Industry afternoon as an attraction in late October followed by the Awards dinner format that has proved so successful in the last 3 occasions. In the meantime consider entering. There will be significant prizes and promotion of excellent farming. The Judging process is not arduous nor invasive. Southland will advance the stock judging section and bring some other unique style to the competition. For further information please contact Mandy Bell or Tony Pearse in the first instance until the final format has been worked out.

SOUTH CANTERBURY/NORTH OTAGO AND OTAGO BRANCHES

Pre-season Velvet & Antler Seminar
17 September 2002
Bushey Park, Palmerston
10.00 am to 3.30 pm

Cost: $10, including Seminar Proceedings

A comprehensive programme covering all aspects of velvet and antler. Topics and speakers include:

- Velvet Science: Jimmy Suttie, AgResearch, VARNZ
- Market Prospects, New and Traditional: Mark O'Connor, GIB
- Production Management: David Stevens, Jim Webster (AgResearch)
- Harvest Management: Charlie Ford
- Genetics and Science: Peter Fennessy, Abacus Biotechnology
- Selection Policies: Tony Pearse, GIB
- Practical Breeding for Top Heads, a Lay Perspective: Clive Jermy
- Welfare: Tony Pearse, John Tacon, GIB
- The Trophy Industry: James Guild, Chairman, Association of Game Estates
- Managing Trophy Stags: Keith Orange
- Update on Johne's: Colin Mackintosh
- Velvet Competitions: Andrew Fraser

Morning Tea, Lunch and Afternoon Tea provided
For catering purposes please
RSVP to Peter Aitken, Ph (03) 614 7482

SOUTH OTAGO DEER GROUP VELVET COMPETITION

Wednesday 27 November
Greenfield Tavern, Clydevale
6.00 pm

For more information please contact:
Ken Harrex Ph (03) 485 9514 or
Barry McCall Ph (03) 415 9252

NATIONAL VELVET COMPETITION AND AWARDS DINNER

10 to 12 December
Ascot Motor Lodge, Invercargill

The premier annual event on the velvet industry's calendar. Entries must be received at Wrightson's Invercargill Branch by midday **10 December**.

Judging will take place on **11 December**.

The Awards dinner will take place on **12 December**.

For more information please contact Bill Taylor, loravalley@xtra.co.nz, Ph (03) 236 0940

New Zealand Deer Farmers Association
OTAGO BRANCH

Seminar

'Protecting your herd's health'

Updating deer farmers with practical herd information and recent developments in research

August 29, 2002
2.00 - 5.30pm

Centennial Court Motor Inn
96 Centennial Ave, Alexandra

$5.00 for afternoon tea and venue

Programme

2.00 Disease Research Laboratory Otago University "Tuberculosis and other mycobugs"
- Diagnosis, vaccines and heritability – new developments and directions — **Frank Griffin**
- Herd Tb test results - expectations and interpretation — **Chris Rodgers**

3.00 Agresearch Invermay
- Johnes Disease – background on the disease and options for farmers to minimise risks today — **Dr Colin Mackintosh**
- Johnes Research Group – discussion on current JD research and the farmer initiated JRG — **Dr Colin Mackintosh**

3.30 Discussion

3.40 Afternoon tea

4.00 Aqriqual
- Tb situation in Otago today
- Epidemiology of possums and ferrets and vector control management on farm — **Dr B Paterson**

4.30 Central Vets
- Trace elements, vaccines, drenching – refresher and updates — **Dr R Bishop**

4.45 Zinpro Animal Nutrition
- Production increases and disease reduction with complexed trace minerals — **Dr P Hodges**

5.00 NZGIB /NZDFA
- Recent news, new PE position and the link to farmers — **Tony Pearse**

Please register in advance to Mandy Bell on 03 4434250 or mandyb@criffel.co.nz

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ZINPRO ANIMAL NUTRITION
The World Leader in Organic Trace Minerals
AVAILA MINS FROM ZINPRO

New Zealand Deer Farmers Association
OTAGO BRANCH

19 August 2002

Deer Farmer

In view of the increasing prevalence of Johne's disease (JD) in deer and the considerable potential of this disease to damage deer farming productivity and create market access issues a group of concerned DFA Branch Chairs, (Canterbury, South Canterbury-North Otago, Otago and Southland) veterinarians, deer farmers and agriculture research scientists have come together as the Johne's Research Group (JRG) with the aim of finding cost effective ways of dealing with JD.

The envisaged goals of the group are to secure funding and develop programmes that will lead to a greater understanding of the disease, practical advice for farmers to action now, an effective form of blood testing o identify the presence of JD and to establish an acceptable vaccine for Johne's in deer. The strong focus of this work is to find in the shortest time frame possible solutions that will deal with the problems this disease poses for deer farmers. As you may be aware there is a considerable amount of ongoing scientific work in Johne's and the JRG will seek to ensure that its programmes are integrated with current research, duplication is avoided and work is directed to outcomes of practical use to deer farmers. At this stage we do not see the prospect of a quick fix but we are hopeful that a well directed and deer farmer focused approach may lead to solutions in the medium term.

As a first step in our programme on JD we are enclosing a background paper on the disease. We appreciate that this is fairly detailed and it may be helpful to have it retained for future reference. As our work progresses we hope to update farmers on developments.

Yours sincerely

Amanda Bell

Amanda Bell
Otago Branch Chairman
03 443 4250

Johne's disease in farmed deer

This information leaflet has been prepared on behalf of the Johne's Research Group (JRG) based in South Canterbury, by Dr Colin Mackintosh of AgResearch Invermay, August 2002.

Lay Summary

Johne's disease (JD) is emerging as a serious disease on many farms in New Zealand.

Johne's disease is a slowly developing disease of the intestines of deer, sheep and cattle, which is caused by the bacterium Mycobacterium paratuberculosis. This organism, which is closely related to avian tuberculosis and bovine tuberculosis, invades the lining of the intestines and is passed out in the faeces by infected animals. It contaminates pasture, water and also the skin around the udder and teats of affected hinds. It may also infect unborn fawns in the uterus and be passed in the milk of infected hinds. Young animals are infected by ingesting infected milk, pasture or water. Deer can catch JD from infected sheep and cattle, as well as infected deer.

The majority of animals appear to develop some resistance to the organism and never develop clinical disease. Some animals develop a chronic low grade infection and may remain subclinical carriers all their lives. A small proportion of animals, usually 1-3% of a group, develop serious disease affecting the entire length of the intestines. Over a period of weeks or months they become unthrifty, usually develop a scour, lose weight and condition and die. It seems that young animals are most susceptible to infection, and stress is an important factor in precipitating disease. Disease generally shows up in deer, sheep and cattle when they are 3 or 4 years of age. However, deer can also develop clinical JD as young as 8 months of age, and outbreaks affecting up to 20% of groups of rising yearlings are becoming increasingly common.

Farmers should avoid introducing infection onto their property by keeping a closed herd. Currently there are no effective tests for cost-effectively diagnosing subclinically infected animals and therefore it is not possible to eradicate JD from infected herds. The organism can last for at least one year on pasture. Farmers can take some steps to lessen the impact of the disease; (a) all affected animals should be culled as soon as they are detected, (b) animals should be well fed, (c) stress factors should be minimised. Consult your veterinarian for other measures.

This is a serious disease because it can cause direct loss of animals, it interferes with Tb testing, it causes problems in Deer Slaughter Plants because JD lesions in the gut lymph nodes look exactly like Tb and it is difficult to control.

There is a programme underway to investigate better diagnostic tests, to develop an effective vaccine and to provide better information to farmers on prevention and control.

Johne's disease in farmed deer

Introduction

Leaders in farming and research are moving quickly to develop research protocols and practical studies to prevent this emerging disease becoming an even greater threat to deer farmers.

Knowing the facts about this potential enemy is an important part of an informed and concerted programme for better control of this disease.

The following outlines current knowledge, testing and prevention programmes as part of the Johne's Disease Group approach through some of the South Island Branches of the NZDFA. This marks a first step in developing a co-ordinated awareness and research programme for the benefit of all involved in the New Zealand Deer farming industry.

The first section is a series of commonly asked questions about Johne's disease (JD) in general and then the second section deals specifically with JD in farmed deer.

Johne's disease in general

What is it?

Johne's disease (JD) is a chronic (slowly developing) disease of the intestines, leading to severe ill thrift and death. JD primarily affects ruminants.

What causes it?

It is caused by the bacterium, *Mycobacterium paratuberculosis*, which is closely related to *Mycobacterium avium* that causes avian tuberculosis and *Mycobacterium bovis* that causes bovine tuberculosis.

Why the name?

The disease was first described in cattle by in 1895 by a German, Dr Johne. He demonstrated the presence of acid-fast bacilli (i.e. that looked like tuberculosis organisms) in affected animals and thought that the disease was an atypical form of tuberculosis.

What does it do inside the body?

The bacteria, which are usually ingested with contaminated food, invade the wall of the small intestines and start to slowly multiply. Meanwhile the body's defence mechanisms cause a local build-up of white cells that try to control the spread of bacteria. It is believed that in the majority of animals, the infection is dealt with and the bacteria are killed. In a proportion of animals, a stalemate occurs and a low-grade infection remains for a long time, often for the life of the animal. In a smaller proportion of animals, the immune system fails to control the infection. The bacteria keep multiplying slowly and eventually they affect the digestive system, leading to illthrift, weight loss and death.

What animals does it affect?

JD affects all ruminants, including cattle, sheep, goats and deer. It can also affect llamas and alpacas (camelids), and antelope species. The causative organism has also recently been isolated from a range of wildlife including rabbits, ferrets, hares, foxes and various marsupials, but the significance of these infections is not known.

Why is there such a fuss about it?

JD is a concern to the livestock industry for six main reasons:

(a) It causes direct losses to the farmer due to deaths of affected animals and it may cause production losses in subclinically affected animals.
(b) Because of its similarity to Tb, JD can cause infected animals to react to the Tb test.
(c) When subclinically infected animals are killed at slaughter plants, a proportion of them will have lesions in their intestinal lymph nodes that are indistinguishable from Tb lesions, and the carcasses must be detained until a correct diagnosis can be made.
(d) There are human health concerns related to the possibility that the organism that causes JD may infect humans in some circumstances.
(e) There is the potential for JD to be used as a non-tariff trade barrier if it is not controlled in some way.
(f) The diagnostic tests available at the moment are of limited use and there are no effective means of eliminating the infection from a farm, short of killing all the animals and leaving it destocked for 2 years.

How widespread is it?

We think that the majority of sheep and dairy farms in NZ are infected, although it may not cause major clinical problems on all of them. The exact prevalence of infection on deer farms is not known.

What are the signs?

The clinical signs of JD usually include diarrhoea, weight loss, illthrift, and loss of condition leading to emaciation and death. There is often oedema (subcutaneous fluid swelling) of the brisket or under the jaw (submandibular), poor coat quality (roughness, loss of pigmentation, alopecia, 'wool-slip') and a drop in milk yield in dairy cows

What causes these affects?

The weight loss (+/- diarrhoea) is due to the damage to the lining of the intestines, which leads to the loss of protein and tissue fluids from the gut wall and interference with the absorption of nutrients from food. This lowers the level of protein in the blood, leading to water accumulating under the jaw and brisket.

Does it affect these animals in different ways?

The severity of JD appears to be affected by the age and genetic makeup of the animal, the degree of exposure, and many stressors, including nutrition, stocking rate, environmental factors and pregnancy. Most animals do not develop any clinical signs of disease at all. Some of these animals are either not infected or they appear to "self cure". Others remain as subclinical carriers. A small proportion (usually 1 – 3%) of sheep and cattle develop clinical signs of JD, usually at 2-4 years of age. Some breeds of cattle (Jersey and Limousin) and sheep (merino) appear more susceptible than others.

Are deer different to sheep and cattle?

Yes. Although occasional cases of JD occur in older hinds and stags, as occur in sheep and cattle, deer can also develop clinical JD at a much younger age and at a much higher prevalence than sheep or cattle, with outbreaks affecting 10 – 20% of groups of 8-15 month old yearlings. It commonly affects weaners in spring and early summer, and the scouring has often been misdiagnosed as a parasite problem. In addition, the lesions in Johne's disease in deer, but not cattle or sheep, often resemble those caused by bovine tuberculosis.

Johne's disease in farmed deer

What causes Johne's disease (JD) in deer?

Deer are susceptible to both "sheep" and "cattle" strains of *M. paratuberculosis*. This means that there is a risk with grazing deer on pasture on which infected sheep or cattle have grazed in the previous 1 – 2 years.

What are the signs of JD in deer?

There are two clinical forms of the disease in deer:

(a) Sporadic or occasional cases, which occur in mixed-age hinds and stags.

(b) Outbreaks, which occur in yearlings 8 – 15 months old.

Both are important. The outbreak is of real concern because of it has the greatest financial impact. Sporadic cases however are an indicator that JD is endemic in the breeding hinds or the stag mob.

Sporadic cases in mixed age hinds and stags?

Usually 0.5 - 2% of the herd are affected per year. Affected hinds and stags usually develop a chronic scour and gradually lose weight and condition over a period of months.

Apparently normal deer from affected herds can have gut lymph node lesions when slaughtered in DSPs, and these cause problems because of their gross and histological similarity to bovine (and avian) Tb lesions. Affected animals may be downgraded from "export" to "local", with a considerable reduction in payment. Infected hinds act as a source of infection for the next crop of weaners.

Outbreaks in 8-15 month-old yearlings?

These outbreaks may involve up to 20% of that age. Affected weaners/yearlings usually have a green sticky scour, which gets plastered around the tail, perineum and hocks. In spring and early summer they do not moult their winter coat and they take on a "moth-eaten" appearance. They may quickly lose weight and die in a few weeks. In herds that have experienced these outbreaks, up to 40% of apparently normal yearling animals can have gut lymph node lesions when slaughtered in DSPs.

If there are infected animals, how does this affect the rest of the herd?
If you get outbreaks of JD in weaners bred on your property, then it means that some of the hinds are infected and they are contaminating the environment and exposing the young calves to infection from an early age. If the weaners were brought in, then it is most likely that they were already infected when they were purchased. Once JD cases have occurred on a farm then the infection is likely to have been introduced permanently. Losses in adult animals suggests that JD is well established in the herd and the weaners are probably at risk of outbreaks, although we do not know what risk factors are most important in causing outbreaks in young deer.

What will I see at post mortem?

The gut lymph nodes are usually enlarged and may contain creamy white caseous (cheesy) lesions.

The ileo-caecal valve at the terminal end of the small intestine (ileum), where it meets the large intestine (caecum), is not necessarily grossly affected in deer (by contrast, it is almost invariably thickened in sheep). There is usually little or no carcass or abdominal fat in these animals that have been rapidly losing weight and condition. The gut membranes tend to be oedematous (watery/jelly-like) and often have thickened white cord-like ducts leading from the intestine to the lymph nodes.

How is it diagnosed?

There are many diagnostic tests for JD in deer but they all have failings or weakness. None of the available JD diagnostic tests are sensitive or specific enough for a test-and-slaughter programme, unlike the situation for Tb.

Tests in the live animal:

Serological tests, such as the **Gel Diffusion (GD or AGID) or ELISA test**, are good for confirming JD in animals that are showing typical clinical signs of weight-loss and condition-loss, but are poor for detecting subclinically infected animals. The sensitivity of these tests in clinically normal animals may be as low as 20 – 30%. False positive tests will occur in deer with clinical avian tuberculosis.

Although the **Lymphocyte Transformation (LT) test (as in the BTB)** is moderately sensitive for detecting early cases of JD, it is not practical because, as well as being expensive (~$100), it has poor specificity because of widespread sensitisation from exposure to avian Tb (M. avium), which is a very closely related organism and causes a high proportion of uninfected deer to give a false positive result.

Similarly, the **skin test (ST)** has poor specificity because it cannot differentiate between M. avium and M. paratuberculosis sensitisation.

Faecal culture is more sensitive than serology. Repeat culturing of faeces from individual deer is more sensitive than a single culture. It is relatively expensive at around $40 per culture and takes 4 -8 weeks for a result.

Bulk faecal cultures, where 10 to 50 samples can be mixed and a single culture taken to detect JD in a flock or herd is probably the most economical way of screening herds for infection. The sensitivity of this method has been shown to be adequate for detecting infected sheep flocks in Australia, but it has not been evaluated for deer.

PCR (DNA based polymerase chain reaction test) is a laboratory test that is an alternative to culture. It is more expensive and quicker, but it is less sensitive especially when applied to faeces.

Tests in dead animals:

Post mortem examination of clinically affected animals or inspection of the intestinal tract and lymph nodes at slaughter may reveal suspicious lesions and these can be examined by histopathology, which will show if the lesions are typical, suspicious or negative for characteristic lesions and the presence or absence of acid-fast-organisms.

Culture is the "**gold standard"** for diagnosis of material from these lesions. It has the advantage of being able to confirm the type and strain of organism involved. The PCR may also be used and it has the advantage of taking only days rather than the weeks necessary for culture.

What is JD likely to cost me?

In1998, Agriculture NZ estimated that for a commercial deer farmer, the death of an individual adult hind costs ~ $1000 and an outbreak in yearlings involving 12% of an average weaner mob (eg 40/325) may cost ~ $25,000. Losses for stud operations will be much greater if farmers choose not to buy animals from a stud that they know has a JD problem. Total annual losses to the deer industry are likely to exceed $1,000,000.

What is likely to happen in the future?

We think the number of infected farms is steadily increasing. Therefore, if you think you are free of JD then that is a valuable position to be in and you should take positive steps to retain that status. Deer farmers and the deer industry will have to face up to increasing costs for the prevention and control of JD.

Is there a risk of humans becoming infected?

Currently there is much international debate on this issue. There are some similarities between Johne's disease in animals and Crohn's disease in humans. They both have very similar lesions in the intestines. The following is a statement of an expert panel from Europe: "*The currently available evidence is insufficient to confirm or disprove that Mycobacterium paratuberculosis is a causative agent of at least some cases of Crohn's disease in man. There are sufficient grounds for concern to warrant increased and urgent research activity to resolve this issue*". Human health authorities tend to take a conservative position and this could have international repercussions on the trade of animal products from JD affected or infected animals.

How can we prevent JD getting onto a deer farm if it is not there already?

- Ideally this means you must keep a closed deer herd and only bring in new genetics via semen, fertilised ova.
- If live animals are brought on, then they must be obtained from a "clean" farm ie "free" or low risk of JD (which will require a period of testing and certification - see below "How can we identify 'clean' animals?" and "Market Assurance Programme").
- The most basic thing a buyer can do is to ask the seller if they have had any cases of JD diagnosed in their deer on farm or at the DSP. If they have never had any cases diagnosed, then they should be prepared to sign a certificate to that effect. Ask if you can consult their veterinarian to see if he suspects or has diagnosed JD on that farm in the past, especially with previous owners or managers.
- Avoid bringing sheep or cattle onto the deer farm.
- If you must bring cattle, sheep or goats onto the farm, then it is essential to do everything practicable to ensure they are free of JD, which is difficult.
- You must prevent runoff of contaminated water from paddocks outside the deer farm. There should be vehicles dedicated to the deer farm or the wheels of vehicles driving on and off the deer farm should be cleaned of faecal material or contaminated soil.
- *In practical terms it may only be feasible to minimise, rather then eliminate risk. For example if it is necessary to use cattle to control pastures, then young beef cattle are a lower risk than dairy cattle because of the lower prevalence of infection in beef cattle and young cattle, 18 months old beef cattle are less likely to shed large numbers of organisms if they are infected.*

Consult your veterinarian for further advice.

If I have JD on my farm, what are my current options for controlling it?

There are no current control programs that will eliminate JD from an infected herd, and this highlights the need for prevention. None of the serological tests are sensitive enough to detect many of the subclinically infected animals, but they may identify a number of infected animals, especially those that are the most severely diseased and shedding appreciable numbers of organisms onto the pasture. In cattle, repeat faecal culture of individual animals is the most sensitive method of detecting subclinically infected animals. However, we do know how well this works in deer, it is expensive and it may only be warranted with very valuable animals.

In the absence of an effective way of eradicating JD infected animals from a herd it means that we must rely on management to reduce the impact of the disease. The number of clinical cases

of JD and the economic impact may be minimised by using an integrated management system aimed at:

(a) Culling affected animals as soon as possible to minimise contamination from infected faeces.
(b) Culling animals positive to the GD test, because this will detect animals most likely to become clinical in the near future. Note that the cost-benefit ratio of this should be assessed according to individual circumstances.
(c) Minimising stress, by reducing stocking rates and providing optimal nutrition.

Alternatively:

(d) Offspring of animals of high genetic merit such as stud stock may be preserved by embryo transplant to "clean" animals that are run on a "clean" farm. Alternatively, fawns may be removed at 24 hours old and hand reared and run on a "clean" farm, although there is a very small risk of *in utero* or neonatal transmission. This is expensive and the problem is finding "clean" animals.
(e) If repeated outbreaks of JD are occurring in weaners then it may be advisable to de-stock the breeding herd. The options are then to get out of deer altogether or to change to alternative forms of deer farming such as buying in and fattening weaners annually, running a stag velveting herd etc.
(f) To eliminate JD completely it is probably necessary to de-stock the deer farm completely for up to two years. Other forms of land utilisation such as cropping, fattening beef cattle or grazing horses, may be used during this period.

Consult your veterinarian for further advice.

What are possible control options for the future?

Vaccination: In the absence of an effective test-and-slaughter option, vaccination is likely to be the most cost-effective means of controlling JD in the short to medium term. A recent trial at Invermay has shown that the current oil-based Johne's vaccine ("Neoparasec", licensed for use in sheep and cattle, where bovine Tb is not an issue) causes a large injection site lump and high levels of antibody that cross-react with the serological test for Tb. A Novel vaccine that does not contain an oil adjuvant was tested at Invermay last year and caused minimal injection site lesions and significantly less interference with Tb tests. An efficacy study is currently underway in Canterbury and Otago.

New tests: We live in hope that new tests can be developed, which have sufficient sensitivity and specificity to be useful in controlling JD. There is research activity around the world to develop better tests for cattle, sheep and deer, but the this is a long term goal. On a local basis, progress is being made with new blood tests with improved sensitivity and specificity, but they are unlikely to provide the complete solution in the short term

Management options: A better knowledge of the risk factors that predispose farmed deer to JD will assist in the development of better control programmes based on minimising risk and improved management

How can we identify "clean" animals?

In order to identify "clean' animals we need to identify a system for testing herds of deer so that we can have some assurance that all the animals on a tested herd are at a low risk of having JD or are "clean". Overseas they have developed Market Assurance Programmes (MAPs) for cattle and sheep based on repeated whole herd testing and built up a level of assurance that the herd is unlikely to be infected.

How would a Market Assurance Programme (MAP) work?

A voluntary MAP would involve repeat testing of herds using the best tests available and over time the herds build up a rating of clear tests or Cx status, which would be similar to the current Tb testing programme for deer and cattle in NZ. People wanting to buy animals would be advised to buy from herds that have a high C rating, which means there is a very low risk of the herd having JD infection. Currently this is not feasible for deer in NZ but the development of cost-effective faecal culture systems (such as pooled faecal cultures) would allow a MAP to be developed.

What is the current status of JD research in NZ?

Currently research is being undertaken in the following areas:

- Vaccination trials
- Serological test development
- Pooled faecal culture
- Pathogenesis studies
- (Epidemiological studies are planned.)

Summary of Critical Issues

- JD is potentially very serious for the industry.
- The incidence of JD is rising in the deer industry.
- The prevalence of infected farms in NZ is not known.
- Individual farmers and the deer industry (and other livestock industries) face increasing losses and costs associated with JD.
- Control is difficult and expensive.
- Good management appears to be the best control option
- An effective vaccine is one of the current primary research objectives.
- Prevention is the best option, by keeping a closed herd, which limits the introduction of replacements or sires, unless sources of “clean” animals can be identified.
- A voluntary Market Assurance Programme may be warranted if the herd prevalence is low enough to encourage farmers to join the scheme (if they believe their herds are free of JD) and can benefit by being able to market their “clean” deer for a premium.
- A MAP is dependant on the development of a cost-effective herd testing procedure such as pooled faecal culture.