final report

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Keilira Farm Management Group

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Sustainable Internal Parasite Control

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S2003/S02 - Keilira Farm Management Group
Sustainable Internal Parasite Control
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MUTTON

BUDGET $14,260.00

Aim:
1. Compare contamination levels on all members' properties and relate to nutrition, stocking rate and management practices.
2. Learn how to do own egg counts and compare sampling methods accuracy ie 10 individual samples or 50 samples bulked from mob of 1-2000 sheep.
3. Establish a sustainable worm control system to minimise risk of resistance, reduce use of chemical worm controls, and increase bodyweight per ha.
4. Reduce faecal egg numbers
5. Establish best time for 1st summer drench.

Objectives:
1.Compare faecal egg numbers collected each month. This will reflect current practices and benefits and comparisons of adopted practices from 'experts'.
2.Compare grazing techniques for worm control reflected in drench program with condition score and stocking rates and production measured in kg body weight per ha.
3.Accurate egg counting learnt
4.Assess efficacy and resistance levels of worms on individual properties to drench groups.
5.Assess the relative merits of the 'professional worm control strategies'.

Co-ordinator's Comments

2/05/2006 This group has put in an enormous effort in this PIRD and achieved a lot of learning. They organised the best advisors to help them, but their leader Charlie Bruce has done most of the work, so really producer managed. They helped set up a lab with 2 local business women, worm egg counting, and it has become an important local service. They have a much better understanding of the best strategies to combat losses due to internal parasites and how to prolong the effectiveness of the available drenches.

22/08/2005 Project going very well, well managed good data and expert assistance from David Rendell. Last duties to do are resistance tests.

21/02/2005 Testing on weaners and hoggets on each property continues on a monthy basis. Worms rapidly increased FEC's showed a

	problem in weaner sheep at the break of season. KI trip cancelled as they could not gain enough benefit. Project needs to extend to December 2005 to get final data in.
22/07/2004	Going well. Vet David Rendell being very helpful. Big variation in their drench resistance test results. Group to visit KI vets and producers in August 2004.
17/06/2004	Good group, very active in collecting FEC and resistance data-using David Rendell to assist with interpretation and advice. One member [Stewarts] also in Life Time Wool Project working in with both projects. This project has assisted an independent FEC lab become established – keeping pressure on the price of service.
1/10/2003	First report very comprehensive and shows enormous learning and group effort.
15/07/2003	Good group. New budget to $14,000. Ready to go (28/08/03 waiting on Neale).

S2003/S02 - Keilira Farm Management Group

Sustainable Internal Parasite Control

Final Report May 2006

Group Background

Group formed for Prograze, then PPP, with grazing management study visits to WA, Victoria and South NSW. Group meets regularly bi-monthly.

Problem Definition

There are many 'experts' on worm control, often promoting different strategies with drench resistance looming. Group members suffered high losses last season on this advice. Desire to know quantitative worm levels links to nutrition or climatic events, and establish sustainable control. There is a suspicion that worm FEC's don't reflect true gut worm status, and that un-expected "crashes" occur because of this.

Project Overall Aim

1. Compare contamination levels on all members' properties and relate to nutrition, stocking rate and management practices.
2. Learn how to do own egg counts and compare sampling methods accuracy ie 10 individual samples or 50 samples bulked from mob of 1-2000 sheep.
3. Establish a sustainable worm control system to minimise risk of resistance, reduce use of chemical worm controls, and increase bodyweight per ha.
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Methodology

1. Visit at least 2 'worm professionals' to assess their control strategies.
2. Some individuals to adopt a stated methodology from professionals after recording/monitoring benefits of past program, while others maintain control of past programs.
3. Monthly monitor worm counts of weaners and hoggets.
4. Condition score and pasture score (FOO) and dag score at sampling.
5. Regularly meet and compare results and analyse systems - email each month.
6. Compile results of information on data base spreadsheet for professional and group member analysis. Compare results of sampling 10 sheep and averaging or sampling 50 sheep and bulk testing for assessing FEC of large mobs of sheep by Rob.
7. Monitor progress in breeding sheep resistant to worms.
8. Monitor effects of co-management of sheep and cattle.
9. Smart grazing to clean pastures.

FINDINGS

Since the wormy winter of 2002 we are much better informed about sheep worms. We have had help from Ian Carmichael (SARDI parasitalogist) defining our problem and David Rendell (vet consultant, Hamilton) helping us cope with it. Kevin Bell (vet consultant WA) and David Hacker (Para-Tech Vic) helped on Anthelmintic Resistance and strategies to cope with it. Peter Schroder and Andrew Thompson have given invaluable help with stock condition targets.

Everyone is very impressed with the help these people have given us.

I would like to thank Rob for organizing the FEC testing each month and paying for it while we waited for MLA to get organized, Jack for doing the graphs, Lachie for organizing the drench resistance trials, Gerald Martin for his help with our programme and all the report writers. Cyndy and Heidi have done a very thorough job with their FEC lab for us and David Rendell advising on worm management strategies.

Some main points :--

- OSTERTAGIA are developing drench resistance faster than TRICHOSTRONGYLUS which has little resistance so far.
- OSTERTAGIA are a major worm in WA but secondary in SE AUST so their strategies may be different for control.
- Worms estimated to cost SA $38 million (2002)
- Only 2-3% of worm population are in the sheep.
- Larvae on pasture peaks in July and August each year – repeatably.
- June pasture larvae could be from summer or two week old faeces
- .TRICHOSTRONGYLUS VITRINUS is the worst TRICH. And the one we have in SE AUST.
- Ian would expect the group to have basically the same worm species.
- Rendell's Sheep Worm Matrix – Low body score + low feed + high contamination = Worm trouble
- Lambing % is a good guide of how hard stock are run on a property.
- Theory doesn't always work, some clients 5yr cydectin = bad resistance, others 12yr capsules still no resistance.
- 3 score sheep safer from worms but excess feed over summer is a worm haven and spells danger.
- 2.5 – 3 score condition maximizes production
- should be suspect worms if weaners have hollow flanks on good pasture
- High quality pasture requires >35% clover and <10% dead grass.
- Going from1200 dm to 800 dm/ha in winter greatly reduces growth.
- Breeding for worm resistance very effective.

Our Conundrum…… A Balancing Act

1 Keep sheep in score 3 condition BUT Graze pastures short over summer to reduce worm contamination.

2 Keep sheep worm burden low over summer using effective drenches to reduce pasture contamination BUT leave 5% ewes undrenched to slow rate of drench resistance

3 Weaner sheep need some exposure to worms to build up resistance BUT worms very rapidly get out of control in young sheep.

4 Stubbles and cattle cleaned paddocks give RR worm control BUT worm contamination comes from drenched sheep's faecies which are the ones resistant to the drench used, and thus rapidly increase drench resistance on these properties.

Conclusions

Although we have not come up with easy answers to the sheep worm problem I am confident that we have a good understanding of how to keep in control this major problem and would not expect to be caught with the trouble we had in winter 2002.

PIRD Objectives

1 Compare faecal egg numbers collected each month. This will reflect current practices and benefits and comparisons of adopted practices from “experts”.
2 Compare grazing techniques for worm control reflected in drench program with condition score and stocking rates and production measured in kg body weight per ha.
3 Accurate egg counting learnt
4 Assess efficacy and resistance levels of worms on individual properties to drench groups.
5 Assess the relative merits of the “professional worm control strategies”.

Goals Achieved

Understanding of worm species in our area and their annual cycle

1. worm risk management – Rendell‘s sheep worm matrix.
2. Faecal egg testing – TURDS‘r‘US – helped set up very successful local testing lab.
3. Monitored weaner and hogget FEC‘s on all properties for 3 years – results (graphed) showed different management has huge impact on results. All styles of management had times of high and low FEC‘s.
4. Drench resistance testing carried out – large variation between farms some with high resistance levels. Worm control seems similar regardless of resistance status with careful management.
5. Lavael culture performed – all resistant worms Ostertagia – (zero trichostrongylus at present).
6. 2nd drench resistance test carried out 2 years after first to measure changes.
7. Pasture Larvael Counts carried out on several properties – results exactly as predicted peaking in winter.
8. Dung beetles – day spent with dung beetle expert in hope of burying worm eggs in dung by beetles.
9. Learning what are critical levels of FEC‘s for different sheep at different times.

General Summary

By Jeff England

We have learnt to manage worms using various methods such as Faecal Egg Testing (FEC), drench resistance tests, drench rotations, smart grazing and rotating sheep with cattle, all of which need to be applied at appropriate times of the year.
We also learnt the reproduction cycle of the worms and how this relates to the annual climate pattern so that the parasitic effects can be minimised by knowing when to apply strategic drenches and when to expect high worm larvae levels in the pasture and the subsequent danger period of rapid worm explosion in the sheep.
Unfortunately in all production systems there is never a single “silver bullet” “cure all” method and, I think, our most valuable lesson has been learning how to minimise the damage and optimise the sheep production by living with a certain level of worms rather than trying to totally eliminate them.
This approach should prolong our drench effective lives by using less strategic summer drenches and trying to get the sheep to develop an adequate level of immunity by exposing them to low levels of worms over longer time periods.
Our challenge in the future is to sustain production at the optimum stocking rate as drench resistance increases, (which appears to be inevitable), and using tools like Dave Rendell’s Worm Matrix and, most importantly, adequate nutrition at the critical times, coupled with our new knowledge of when to anticipate troubles (which can be different each year due to altered rainfall/temperature patterns).
Continuing our group contact with each other will provide us with support, and the knowledge we have gained will help us to evaluate other expert’s opinions and future research.

By Doug Stewart

When we started into the PIRD our property was identified as one of the properties in the group where drench resistance was high and as a consequence our options reduced.
The monitoring program we undertook educated us and gave us a better understanding of the parasite we are dealing with.
The workshops held were informative and again gave a greater insight into what we were dealing with. However there were no conclusive answers and in many cases the experts gave conflicting views as to how best to manage to the issues.
The second resistance trial we undertook at the end of last year 2005 showed that our status hadn’t changed over the 2 year period.
The conclusions we have come to are there are no quick fixes (thought buying rams where worm tolerance is measured is a good start).
There is no rule of thumb that one can use as to the time of drenching. Though the FEC monitoring was a handy aid at the critical time June July August, 4 weekly might be too far apart. We found that those animals under stress, nutritionally environmentally or physically could be identified usually with worm burdens before the FEC registered the rise.
By being better informed through monitoring and the information gathered at the workshops, we have more confidence in our decision making.
The holding of the life time wool trials on our property we have also gained further information particularly relating to the nutrition levels of stock and the consequent susceptibility of the lower nutrition animals to worms.

By Rob & Mignon England

Our PIRD has been a very beneficial research project, answering many questions along the way, but also causing us to agonise over many more that have arisen.
It has become clear from the results of the two drench resistance tests done two years apart that we have undertaken as part of our PIRD (giving a trend of drench efficacy over 4 years), that going for low worm eggs on pastures by summer drenching, and drenching sheep onto cattle cleaned pastures and stubbles or hay cuts (one of the advising"worm specialists" recommendations) is also the quickest way to drench resistance -- I.e. by drenching onto these clean paddocks, the only parasites to survive are the ones resistant to the drench used, and these build up rapidly in the sheep run on these paddocks, and are then transported over the whole farm with subsequent stock movements. It follows that a similar drench resistance is probably occurring in the cattle for the same reason, but this is outside the terms of this PIRD.

This then begs the question... "Is the long term maintenance of effective drenches and possible lower animal performance due to parasites more important than low levels of pasture contamination which may result in lower FEC's and less need to drench throughout the year?"

This question then leads to the next.. "Is a low FEC or pasture contamination level post summer the way to go, or should we rely on the summer heat to kill oversummer eggs, and be demand drenching to assist the stock through the strategic autumn & winter stress times, and prolong the use of the drenches because we know there will be heaps of contamination present in the paddocks the stock return to?"

"Is feed management and utilisation of summer for the baking effect, and maintaining condition score 2.5 or better, a way to go?"

Perhaps we should cull the "extreme shitters" by visual culling, and not worry about high FEC carriers if they show little detrimental effect?

These are the questions we have to answer as individual property managers, and be happy with the reasons for the adoption of whichever path we go down.

However, at the same time, we can use effective combination drenches to extend the lives of the drenches we have available to us - as we are doing. We can also make use of Cydectin - which many of us are holding in reserve as our 100% drench - and theoretically clean out all of our problems for a while, which should make most of the available drenches effective again.
Unfortunately internal parasite control has no set answer, but our PIRD has made us very aware of the best ways to handle the problems as they present themselves, and to constantly be on the look-out for any new strategy. Knowing what is happening "next door" has been a great help throughout this project, and will continue to help as the Keilira Farm Management Group continues with this, and other projects.

by Anthony McInness

After participating in the worm testing in the area with other PIRD group members I managed to come to the conclusion that

My sheep have been suffering from worm burdens for some time, without be being aware of the problem. Since changing my drenching/worm management I have had a noticeable increase in sheep health/stamina. I haven't measured any extra production but am sure there is some due to the healthier sheep.

Worm testing is a good indicator of worm levels in sheep 1 month prior to testing. Testing can be used to

- Back up a theory that there is a worm burden after doing a visual inspection.
- Give a indication that there is a worm burden problem approaching eg a need to give a pre lambing drench or drench earlier if changing paddocks.
- Know how much the sheep currently in the paddock are increasing the worm population in the paddock.
- Give a indication of the effectiveness of a drench.
- Know what types of worms are in the population to asses what effect the worms will have on the class of sheep as well as what drench to use.

Worm burdens can multiply at fast rates. i.e. slowly increasing level at one test then give sheep some sort of extra stress eg. Change of feed type/amount, lambing or extreme weather conditions and then there is a rapid rise in worm burden requiring a drench.

I now also have a better understanding of drench resistance and the methods used to prolong drench life eg

- Leaving 5% of the mob undrenched to carry over a worm population that hasn't been treated with the drench used.
- Drenching all sheep and returning the sheep to a paddock that has a worm larvae population that hasn't been recently exposed to the drench used.

I also have a better understanding of how worm burdens affect the different classes of sheep eg.

- Young lambs need to be exposed to low levels of worms to build up a natural immunity to the worms.
- Rams can suffer from worms more that other sheep. I have lost a few rams before due to not monitoring and drenching after using them for mating.
- Ewes suffering the stress of lambing can have dramatic increases in the worm burdens if the worm levels aren't reduced prior to lambing.
- Wethers can tolerate worm burdens better than most but still need monitoring during the tougher parts of the year.

What I would still like to know or have a limited knowledge of still is

- Drench selections to make up a drench rotation
- How to better use cattle to reduce drenching frequency
- If I don't use drenches that have a resistance problem will they come back into use and if not should I be using them to manipulate worm population during the growing season to get past high stress events.
- Is drenching the growing lambs/weaners only and leaving all adult sheep undrenched a potential strategy.
- Do I drench using methods to prolong drench effectiveness or do I drench to increase sheep health and production.

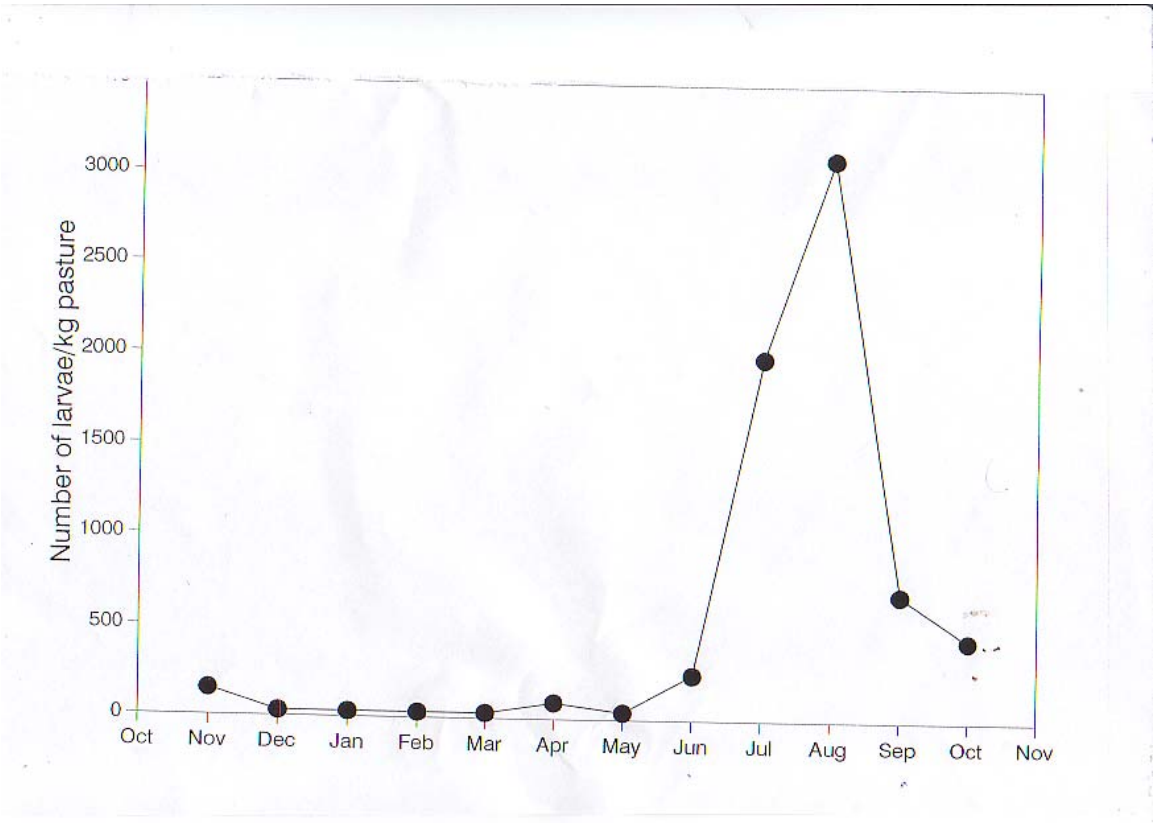
by Peter Symonds

1 After much testing the first thing learnt from the PIRD was the relationship between available green feed and the rise in egg numbers. Especially in warmer weather. Matching this with information on the rise of numbers over a set time in the same paddock helps pick a date for the most efficient drench time.
The next decision was to find the most efficient drench to use so a drench trial was essential to fill in the gap.
In Keilira Station case it has stopped us drenching on a whim and actually find out if a mob needs drenching and with what we drench.
F.E.C. testing is only a guide to actual worm burden but is essential to pick up the rise (sometimes rapid) in egg numbers.
Work done by some members on pasture tests for worm numbers was also very interesting and showed just how clean paddocks actually were.

2 The biggest threat to drench programmes is resistant worms. We already know what drenches are effective at the moment.
Not drenching 5% of the mob might prolong this but shifting mobs into "clean" paddocks after a drench must be partially negated if 5% of the mob are reinfesting from day 1. I would like to know if there are other ways to prolong drench efficiency.

3 Talk to people in areas where drench resistant worm are a greater problem and find out what they are doing.

Reference and Data



Rendell's Worm Matrix
to Assist Worm Control Decision Making

David Rendell & Assoc 170 Mt Balmbridge Rd Hamilton, Victoria, 3300, Australia

Introduction

"Rendell's Worm Matrix" defines worm risk for sheep flocks in the winter rainfall zone of SE Australia. "Rendell's Worm Matrix" (Table 1) and worm control strategies (Table 2) was trialed by over 90 sheep producers participating in 7 worm focus discussion groups between 1995 & 2000.

Rendell's Worm Matrix was runner up for the 2000 Hugh McKay NRE Vic Science Innovators award.

"We laminated a copy of Rendell's Worm Matrix and keep a copy in the ute for constant reference."
D & A Watt Balmoral Vic

Method

1. Assess the average worm risk rating of a particular mob for all the relevant risk factors using Rendell's Worm Matrix (Table 1 above).
2. Using the mob's worm risk rating select the appropriate level of worm control for the mob in table 2 opposite
3. Implement the plan on time.
4. Re evaluate at least annually.

Conclusion

Rendell's Worm Matrix has lead to an understanding by sheep producers of the principles of worm control empowering sheep producers to implement effective and efficient worm control strategies.

Management targets set for low worm risk and minimal drenching are consistent with Prograze™ targets and are achievable.

Table 2 shows the worm control consequences of running a mob in the high risk column of Rendell's Worm Matrix.

Acknowledgments
Peter Schroder (Hamilton)
Meat and Livestock Australia
Dr Andrew Thompson DNRE (Vic)

Table 1. "Rendell's Worm Matrix"

Risk Factors	Mob worm risk level		
	High	Medium	Low
Age	< 1-Y-0	2-Y-0 & CFA	3, 4, & 5+Y-0
Fat Score	< 2.0	2.0 – 3.0	> 3.0
Pasture *(Kg DM/Ha)*	under 800 (1" high)	800 –1500 (1- 2" high)	1500 + (2"+ high)
Grazing History *Last 3- 6 mths*	• lambing ewes • sheep < cond score 2.5 • sheep < 1-Y-0	• sheep fat score 2- 3 • sheep 1 to 2-Y-0	• cattle • capsuled sheep • adult dry sheep fat score 3 +
Lactation	Lambing to mulesing	Mulesing to weaning	Dry
Dry Pasture at Autumn Break	High (>3000)	Mod (1000 – 1500)	Neglible carryover dry feed
Hay making weather *(for hay aftermaths)*	Rain delays raking > 14 days	Moderate delays	Fine sunny weather
FEC	300 +	100 - 300	< 100
Last Drench	> 6 weeks	4- 6 weeks	< 4 weeks

Table 2. Rendell's sheep worm control strategies

	Mob overall worm risk rating		
	High	Medium	Low
1st Summer Drench	Oct & Dec	Nov	Dec
Summer FEC	Jan Feb & Mar	Feb	Mar
Monitoring after Aut Break a) Visual inspect *(scouring & alertness)*	At wks 4 – 7 Twice weekly	At wks 6 – 8 Once weekly	Low priority
# b) FEC	At 7 weeks then every 2-4 wks	At 8-9 wks then every 4 wks	July
Aut/ Winter/Spring Drenches a) Maximum frequency	4 – 6 wks	6-8 wks	3 – 12 mths
b) No of drenches	3- 6	1-3	0 or 1
Lambs first drench *(Months after lambing starts)*	2.5 mths	3 – 4 mths	4 – 4.5 mths
Ewes: a) Prelambing b) Lambmarking	Drench Drench	FEC FEC	Nil drench or FEC

 # medium or low worm risk sheep may need more frequent monitoring if on proposed weaning or maiden lambing paddock

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Heidi and Cyndy in the poo, by choice

"WE take shit from everyone" is proving a catchy and successful slogan for a new local business Turds R Us, set up by Heidi McInness and Cyndy Symonds.

The two friends count worm eggs in sheep faeces to help farmers:

• Decide if their sheep need more than one summer drench and weaner drench.

• Find out if worms are to blame for the problems (such as scouring or ill thrift.)

• Find out if the present drench is working.

They came up with the motto and the name as an "in-joke" within the Keilira Farm Management Group, but are now starting to attract attention.

"It started out as a joke because we thought it would be just the KFMG," Mrs Symonds said. "But we have had so much interest that goes beyond the group, we have registered the business name."

They are not sure if they will keep the motto because, "it depends on if it starts offending people," she said.

The Turds R Us laboratory is in a room at the former shearing quarters on Phillip McBride's Keilira Station. This is provided rent free in exchange for free testing and counting.

Mrs Symonds and Mrs McInness became interested after Charlie Bruce from the KFMG suggested the idea.

KFMG previously sent its samples to be tested monthly to Naracoorte and Penola Veterinary Clinic.

Cyndy Symonds (back) and Heidi McInness of Turds R Us examine a sheep faeces sample in their laboratory at the Keilira Station shearing quarters.

Last October, Mrs Symonds and Mrs McInness travelled to the SA Research and Development Institute in Adelaide to learn faecal egg counting.

Richard Martin and Michael O'Callaghan taught them for two days.

On February 2 they did a quality assurance examination in their own laboratory environment.

"During the months since our training we have had valuable support from Jeff England with his veterinary background," Mrs Symonds said. "We have been pleased with the confidence the KFMG has given us."

The group is involved in monitoring egg counts with two mobs of sheep from each property every month. This is to see if there is a pattern with worms in sheep – to break the life cycle of the worms.

Both women work at the laboratory every Tuesday, identifying different types of worms in a varying number of samples.

Several main worm types are common in the SE, including: Trichostrongylus Ostertagia, Chabertia Oesophagostomum and Nematodirus.

After getting 10 fresh samples, collected by the farmers, the Turds R Us partners put them in an esky on ice.

"If the samples are not on ice you do not get a true reading of eggs because the eggs will hatch in to worms and you do not see them under the microscope," Mrs Symonds said.

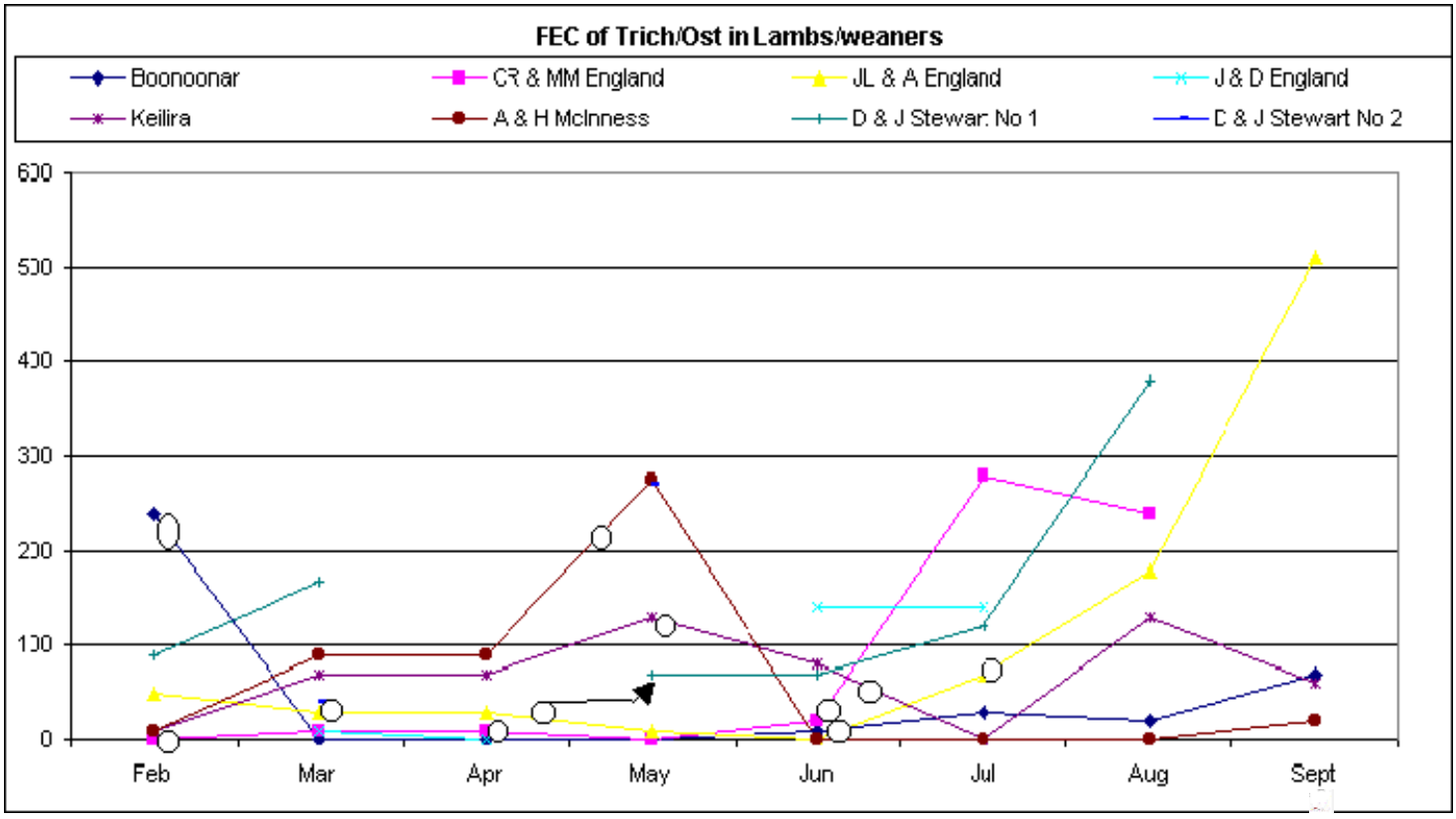
"We take two grams from each sample to make a total of 20 grams. We thoroughly mix it then separate in to three lots of six grams. We mix them with a salt solution, which lets all the eggs rise to the top.

"We use a pipette to suck up the mixture in to a slide and then we take it to the microsope."

Mrs McInnes said: "The hours we work depend on how many samples we have but each sample usually takes about 40 minutes."

For more information contact Mrs McInness on the poo lines on 8767 5057 or 0428 675 057.

Poo PIRDS aren`t all hard work!



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METHOD OF SETTING UP DRENCH RESISTANCE TEST

***Ensure**: faecal egg count of mob is 350 eggs/gram at least, and preferable 400 eggs/gram*

Less than 12 months of age

As get closer to 12 mths require higher FEC particularly once FOO is > 1400 kg DM/Ha

1. Draft off a lightest 120 from mob.
2. Ensure total number in race is a multiple of the number of groups being tested eg testing ten groups 20, 40 etc.
3. Fill up race and remove any very light or weak tail weaners or any odd heavier weaners (keeps weight range tighter).
4. Weigh the heaviest sheep still left in the race. ***……kg (Record here)***
5. Calculate drench dose and set drench guns ***(Record dose used in chart below)***

- BZ for eg Valbazen @ 1ml per 5kg, **…….ml**
- LEV for eg. Nilverm @ 1ml per 4kg **…….ml**
- IVOMEC @ 1ml per 8 kg **…… ml**

  = 1 squirt for ½ dose & 2 squirts for full dose

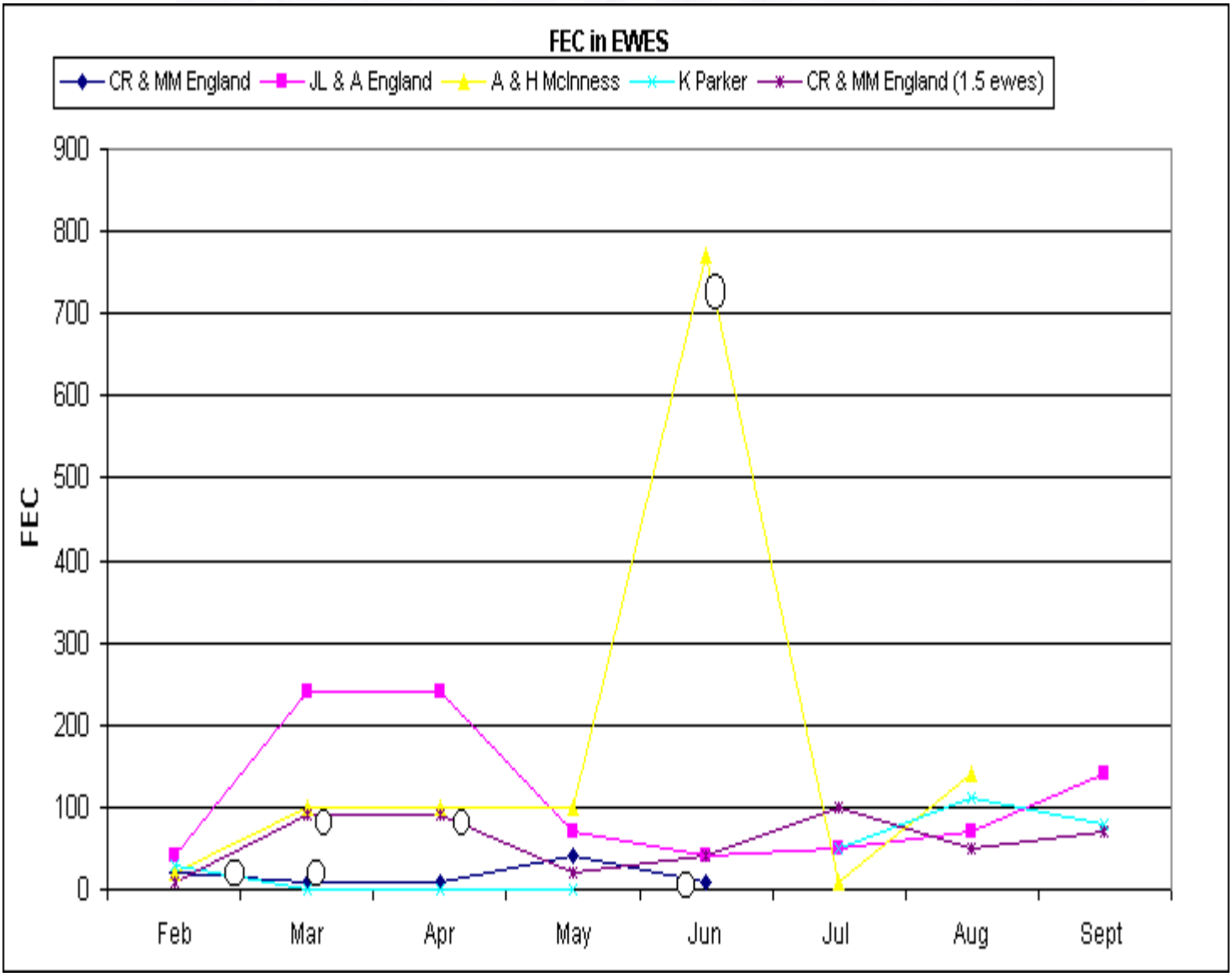
- Rametin see dose rates on back of pack **……ml**
- CYDECTIN @ 1ml per 5 kg ….. ml

6. Spray heads (On top knot wool not bare skin of nose as spray rubs of here) of the sheep **at random** according to the drench codes below, eg. if 15 in the race, spray three lambs with orange spray selected from three different parts of the race. **Use spray marker or brand, RADDLES WILL NOT LAST.** Better to have a small, heavy spray (1" in diameter) rather than a long, thin spray, spray on top-knot won't affect clip-care.
7. Carefully drench each sheep individually according to the spray colour on their head, removing any sheep from the trial that dribble or waste any of the drench. Continue this process until there is a minimum of 12 (maximum of 15) lambs in each group completed.
8. After drenching, it doesn't matter where these sheep are run, as long as they can be easily mustered. Sheep will have to be re-mustered in 10-14 days for collection of samples from each individual sheep. (See the attached sheet for details).

GROUP *(need to discuss which of these groups are appropriate & or others eg Ivomec BZlev)*	**SPRAY on HEAD**	**Number in group**
Control (No Drench)	**ORANGE**	12 - 15
BZ/LEV Cocktail	**RED**	12 - 15
Rametin/BZ/Lev	**Green**	12 - 15
½ dose IVOMEC 1ml / 8 kg	**Purple**	12 - 15
½ dose Ivomec & BZ/Lev	**Blue**	12 - 15
½ dose Ivomec & Rametin	**2 Red dots**	12 - 15
Full dose Ivomec 1ml / 4 kg *(2 squirts of gun)*	**2 x Purple dots**	12 – 15
Full dose Cydectin 1ml / 5 kg *)*	**Blue Red**	12 - 15

KFMG DRENCH RESISTANCE TEST 2003

PROPERTY	A	B	C	D	E	F	G	H	I		AVE
CONTROL	458	1064	860	574	308	643	396	730	808		623
BZ/Lev Cocktail	99%	99%	97%	95%	88%	94%	76%	74%	82%		89%
Rametin/BZ/ Lev	98%	96%	99%	98%	99%	96%	93%	92%	89%		96%
½ Dose IVOMEC	100%	99.8%	98%	94%	94%	88%	94%	62%	76%		90%
½ dose Ivomec & Ram	99%		100%	99%	100%	92%	99%	94%	92%		97%
½ dose Ivomec & BZ/Lev			100%	98%	100%	99%	96%	92%	88%		97%
IVOMEC		100%		99%	99%	95%	97%	78%	86%		95%
Cydectin						99.7%		98%	97%		99%
Triton			99.8%								



KEILIRA FARM MANAGEMENT - 8 NOVEMBER 2005

B.PRS.0307 Sustainable Internal Parasite Control

	Flock Count	Age	Mob Identification Paddock	Condit Score	% Scour	Pasture Length	Lambi Date	Recent FEC Results Date	Strong	Nem	Date last Drenched	Laboratory use only RESULTS Strong	Nemat	Comments	Drench Req'd	Next FEC due
JAE	400	2.5yrs	**Green tag ewe**	3	2	2500kg/ha	Have lambs	5/10	**125**	**0**	Jan 05	**190**	**0**	Very good	Late Nov	Jan
JAE	1700	11mth	**Purple tag mixed**	2-3	6	3000kg/ha	-	5/10	**490**	**100**	20/7/05	**260**	**16**	Good	Early Dec	
Keilira Prop	500	2	**Green tag**	4	10	1200kg/ha 20%dry		5/10	**75**	**16**	7/7/05	**33**	**0**	Very Low	No	Dec
Keilira Prop	1300	1	**Purple tag**	4	10	1500kg/ha 20%dry	-	5/10	**523**	**0**	6/10/05	**16**	**0**	Very Low	No	
CE	800	2y4mth	**Green tag ewe**	3	60	2500kg green		5/10	**183**	**0**	2/6/05	**8**	**0**	Very Low	No	
CE	1400	1y4mth	**Purple tag ewe**	3	40	3000kg green	-	5/10	**66**	**0**	20/9/05	**50**	**15**	Very Low	No	Dec
KMc	1000	1.5	**Purple tag Ewe**	2.5-3.5	1	1800kg/ha	-	5/10	**133**	**16**	25/7/05	**110**	**0**	Low	No	
KMc	400	2+	**Green tag ewe**	3+	2	1400kg/ha		5/10	**176**	**25**	24/6/05	**110**	**0**	Low	No	
PE	233	1	**Lt blue tag lms**	3	50	1500kg/ha		5/10	**0**	**0**	Sep 05	**250**	**16**	Moderate	Late Nov	Jan
PE	150	2-3yrs	**Lemon tag ewes**	3	10	1300kg/ha	lambing	5/10	**158**	**8**	Aug 05	**60**	**16**	Low	No	Dec
CB	1300	1.5	**Purple**	2.5	50	1800kg/ha		5/10	**91**	**58**	10/01/05	**90**	**8**	Low	No	
CB			**Yellow**					5/10				**140**	**16**	Moderate	Early Dec?	Jan
JDE	2600	1	**Purple Lambs**	3	50	Dags		5/10	**8**	**0**	14/9/05	**-**	**-**			
JDE	367	2	**Green Ewes**	-	0			5/10	**-**	**-**	Nov 04	**-**	**-**			
AMc	274	1	**Purple tag**	3+	50	2000kg/ha green		5/10	**91**	**0**	4/7/05	**30**	**0**	Very Good		Dec
AMc	360	2	**Green tag**	3	50	1800kg/ha green	lamb@foot	5/10	**100**	**16**	14/12/04	**90**	**0**	Very Good		
DS	167	2¼	**Green tag**	3+	10	1200kg/ha		5/10	**216**	**25**	24/8/05	**-**	**-**			
DS	895	1 ¼	**Purple tag ewe**	2.5	10	1400kg.ha		5/10	**750**	**0**	2/8/05	**-**	**-**			

Owner: Keilira FarmC

Recommended ewe drench trigger levels in spring *(at or after lamb marking)*
Strongyle 200 –300 epg Borderline *decision to drench would depend on ewe condition and level of FOO (feed on offer)*
< 400 consider leaving 5- 10% of fattest ewes in mob undrenched *(particularly if ewe dry)* so as to reduce resistance selection,

- 400 normally drench 100% although even here little point drenching condition score 3.5 + dry ewes

Recommended 1-Y- 0 Weaner drenching levels in spring
Strongyle 200 –350 epg Borderline Nematodirus 100 – 150 borderline 150 + usually drench 350 epg + normally drench
Avoiding drenching 1-y-0 weaners in spring if mob travelling well will enhance host immunity and reduce next winter's drench requirements

Recommended 1st Summer Drenching (SD1) trigger levels (guide only)
Strongyle 50 –100 epg Borderline
75 -350 epg Mature age (.2-Y-0) drench 95%
350 + epg drench 100%