

NATIONAL WHITE SUFFOLK CONFERENCE
TURRETFIELD SA FEBRUARY 2011

**THE “WHYS” AND “HOWS” OF
WORMTESTING**

**SIMPLE ANSWERS FOR AN IMPORTANT
ACTIVITY**

WHAT IS WORMTESTING ?

- **COLLECTION OF DUNG SAMPLES FROM PART OR WHOLE OF A FLOCK**
- **LABORATORY EXAMINATION FOR WORM EGGS**
- **LAB REPORT AND DECISION ON ACTION OR STORAGE OF DATA**
- **ALSO CALLED - 'MONITORING' OR 'WEC'**

WHAT DOES WORMTESTING DO ?

- **WORMTESTING MEASURES THE NUMBER OF WORM EGGS PER GRAM OF SHEEP FAECES - EPG**
- **THE RESULT INDICATES ONE THING ONLY**
- **IT GIVES AN IDEA OF THE LEVEL OF INFECTION WITH ADULT WORMS AND THE EGG LAYING CAPACITY OF THE FEMALES**
- **BOTH OF THE ABOVE MAY BE REGULATED BY DENSITY DEPENDENT FACTORS OUTSIDE THE DIRECT CONTROL OF THE HOST**
- **THEREFORE WEC MAY NOT BE LINEARLY RELATED TO EITHER THE IMMUNE RESPONSE OR ACTUAL PARASITE BURDEN**
- **AS SUCH, WEC MAY BE CONSIDERED TO BE SIMPLY AN INDICATOR OF RESISTANCE**

FACTORS AFFECTING WEC

- CHANCE EXPOSURE
- VARIATION WITHIN AN INDIVIDUAL SAMPLE
- ACCURACY OF THE TEST
- DIARRHOEA OR FASTING
- AGE OF INFECTION
- IMMUNE STATUS OF HOST
- PARASITE SPECIES

WHAT IS WORMTESTING USED FOR ?

- TO CONFIRM DECISIONS THAT WORM LEVELS JUSTIFY DRENCHING
- TO ESTABLISH WHETHER A DRENCH HAS WORKED
- TO DETERMINE IF WORMS ARE CONTRIBUTING TO SCOURING OR POOR CONDITION
- TO INDICATE THE AMOUNT OF INFECTION GOING ON TO A Paddock
- TO UNDERPIN GENETIC SELECTION FOR WORM RESISTANCE
To assist in selection of replacement sires and to provide information to ram buying clients
- Diagnostic worm testing
- Worm testing to obtain breeding values

CONDUCT OF DIAGNOSTIC EGG COUNTS

- TO LIMIT COST, BULK (COMPOSITE) COUNTS USUALLY FROM 15-20 FRESH SAMPLES
- BEST TO COLLECT INDIVIDUAL SAMPLES AND LET THE LAB DO THE JOB OF COMBINING EQUAL AMOUNTS FROM EACH ANIMAL
- FRESH FAECES IS COLLECTED FROM THE GROUND OR DIRECTLY FROM THE ANIMAL
- DO NOT YARD SHEEP OVERNIGHT
- PUT FAECES IN ESKY OR ON ICE IMMEDIATELY. DO NOT FREEZE
- ENSURE THAT SAMPLES ARE REPRESENTATIVE
- Sandwich bags work very well for this process

INTERPRETATION OF DIAGNOSTIC EGG COUNTS

- Disregard reference to tapeworms, *Trichuris* and *Chab / Oes* (large intestinal worms)
- Disregard *Nematodirus* counts, except in lambs up to marking
- Consider *Trich / Ost* counts, which include:

- *Trichostrongylus*
- *Ostertagia*
- *Haemonchus*

Eggs cannot be differentiated. Culture of larvae and specialist identification needed.

LIMITATIONS OF DIAGNOSTIC EGG COUNTS

- MEASURE EGG OUTPUT IN DUNG BUT DO NOT DETECT IMMATURE WORMS
- MORE RELIABLE IN YOUNG ANIMALS
- EACH MOB MAY BE QUITE DIFFERENT – CANNOT APPLY RESULTS ACROSS THE FARM

CONDUCT OF EGG COUNTS FOR GENETIC RESISTANCE

- POINTS FOR DISCUSSION
- ANIMALS
- HERITABILITY
- TIMING
- PRELIMINARY TESTING
- FINAL TESTING

ANIMALS

- Test valid for any class of animals but obviously most progress if done on rams
- Maternal common environmental effects account for a large proportion of the observed variation in unweaned lambs
- The very earliest that testing should be done is at weaning. Preferable age at least 12 weeks

HERITABILITY

- Genetic variation exists only for acquired resistance
- Ranges in different studies from 0.2 - 0.4
- Most genetic variation is within flocks, meaning that no particular stud is more resistant than another, even those in wormy areas
- In WA some seasonal variation in h^2 – greater when used for selection in winter
- Selection decisions made more accurate using multiple egg counts per animal

TIMING

- Do first measurement at or shortly after weaning
- If necessary, postpone the weaning drench until counts are high enough
- The best ages are around 9 months and then around 15 months but in many cases this may not be practical because worm egg counts do not get high enough
- In WA some seasonal variation in h^2 – greater when used for selection in winter
- Selection decisions made more accurate using multiple egg counts per animal

PRELIMINARY TESTING

- Do WEC on 20 individual samples. This is a screen to see whether you should proceed further
- If counts are not high enough or properly distributed do not proceed further. Test again in 2-3 weeks and review.
- To proceed
 - There should be no more than 10% of zero counts
 - Average count should be around 300 epg
 - Average count should not be dominated by one or two high counts
- Sometimes this whole process will not work out due to seasonal factors and will have to be abandoned

Owner:	SARDI
Address:	Turretfield Research Centre
Date of Collection	20/04/10
	INF 09 Drop Merino Pdk 14

Species	<i>Trichostrongylus/ Ostertagia</i>	<i>Nematodirus</i>	<i>Chabertia/ Oesophagostomum</i>	<i>Trichuris</i>	Other "Moniezia"
Eggs per gram of faeces					
1	0	50			
2	500	50			
3	0	0			
4	50	25			
5	0	0			
6	175	0			
7	0	0			
8	0	0			
9	25	0			
10	50	0			
11	75	0			
12	0	0			
13	0	0			
14	0	0			
15	75	0			

Owner:	SARDI
Address:	Turretfield Research Centre
Date of Collection	13/11/09

Species	<i>Trichostrongylus/ Ostertagia</i>	<i>Nematodirus</i>	<i>Chabertia/ Oesophagostomum</i>	<i>Trichuris</i>	Other "Moniezia"
Eggs per gram of faeces					
BLX 08 INF					
8D 164	50				
8D 186	50				
8D 202	75				
8D 220	0				
8D 323	100				
8D 324	3550				
8D 330	100				
8D 367	0				
8D 376	75				
8D 549	100		25		
MERINO 08 INF					
8D 151	0				
8D 188	0				
8D 365	0				
8D 533	0				
8D 552	50				
8D 599	300				
8D 622	200				
8D 660	25				
8D 671	0				
8D 716	2375				

Owner:	SARDI
Address:	Turretfield Research Centre
Date of Collection	21/09/10
	INF 09 Drop Merino

Species	<i>Trichostrongylus/ Ostertagia</i>	<i>Nematodirus</i>	<i>Chabertia/ Oesophagostomum</i>	<i>Trichuris</i>	Other "Moniezia"
Eggs per gram of faeces					
1	200				
2	250				
3	400		25		
4	875		50		
5	25				
6	325	50			
7	0				
8	200				
9	0		100		
10	0				
11	150				
12	500		50		
13	100		100		
14	175				
15	125		75		
16	250				

Owner:	SARDI
Address:	Turretfield Research Centre
Date of Collection	15/10/10
	INF 2010 Drop Merino + XB

Species	<i>Trichostrongylus/ Ostertagia</i>	<i>Nematodirus</i>	<i>Chabertia/ Oesophagostomum</i>	<i>Trichuris</i>	Other "Moniezia"
Eggs per gram of faeces					
XB					
OD 309	400	50	100		
OD 320	375				
OD 353	600				
OD 410	350				
OD 453	75				
OD 511	400				
OD 515	1250	50			
OD 527	1275	50			
OD 619	1000	275			
OD 738	175				
MERINO					
OD 350	400				
OD 491	150				
OD 496	200				
OD 501	275				
OD 614	1250	200			
OD 673	425				
OD 765	300	50			
OD 820	300				
OD 841	300				
OD 856	875				

FINAL TESTING

- Individual samples from the rectum – 2-3 teaspoonfuls minimum
- Need at least two people
- Do not yard sheep until needed or hold overnight in paddock without feed
- If animals empty put them aside or identify and re-sample later
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- Label carefully. Prepare labelled containers beforehand. Be careful with plastic bags
- Place in Esky straight away. Refrigerate samples if despatched
- Do you trust Australia Post ?
- Do early in week and have them pre-booked in to the lab
- Let the lab make decisions about adjustment for moisture content but inform them that this is required

