DEER HERD HEALTH PRODUCTIVITY AND DATA

L J M Audigé, P R Wilson and R S Morris

1. Introduction

In assessing farm production and performance, the veterinarian or adviser must have some benchmark data for comparison Many figures are available in the deer industry, quoted from various sources, about production levels, reproductive performance, optimum velvet production, mortality rates etc Many figures quoted are "targets" based on achieving the genetic potential of the animal In many situations these targets have become adopted as the norm Most research on productivity has been orientated towards exploiting the genetic potential, eg growth rate studies, and thus figures presented are usually those which are optimum in that type of environment Farmers and others tend to quote the best performance or the best years, rather than the average Farmers not reaching the figures which have become accepted throughout the deer industry often hesitate to admit non-achievement Furthermore, the marketing strategy for the deer industry based on achievement of quality standards, may further encourage those not achieving high productivity levels to remain silent for fear of tarnishing the image of the deer industry

Thus there is a strong risk that a distorted picture of productivity levels on New Zealand deer farms has evolved

One of the objectives of the project entitled *Deer Herd Health and Production Profiling*[1] was to evaluate production levels from commercial herds, and to provide an accurate description of management practices and outcomes at a set point in the history of the development of the New Zealand deer industry Data produced provides a benchmark of factual data which can then be applied to a range of purposes by those involved with the deer industry

2. Collection of data

The method of data collection for this study has been presented elsewhere[2,3,4] Data was collected over a two-year period on fifteen commercial red deer farms, both by the farmer recording data on template sheets and the researcher through frequent visits to the property and collection of a further range of data and samples for which analyses were performed

Farms were selected as representing normal commercial deer herds, although some bias may be evident in the selection process, given that only certain types of farmer are willing to or capable of being involved in this type of study

3. Data presented

This paper presents a brief summary of some of the key observations but is by no means an exhaustive or full composition of data collected and analysed Full data has been published[1].

Summary data includes

3.1 Reproduction

- 3 1 1 Summary of mating management strategies
- 3 1 2 Summary of weaning management practices
- 3 1 3 Summary of yearling and adult hind body weights
- 3 1 4 Yearling and adult hind pre-mating body weight distributions
- 3 1 5 Percentages of yearling and adult hinds conceiving early or late, or not conceiving
- 3 1 6 Percentages of yearling and adult hinds conceiving early, late or not at all
- 3 1 7 Distribution of yearling and adult hind conception rates and and early conception within mating mobs
- 3 1 8 Calving date distributions of yearling and adult hinds
- 3.1 9 Overall weaning percentage and reproductive efficiency of yearling and adult hinds

3 2 Growth

- 3 2 1 Means
- 3 2 2 Ranges
- 3 2 3 Standard deviations and quartiles bodyweights of weaner hinds and stags
- 3 2 4 Means, ranges, standard deviations and quartiles of growth rates of weaner hinds and stags
- 3 2 5 Mean and standard deviation of body weights of weaner hinds and stags
- 3 2 6 Mean and standard deviation of seasonal growth rates of weaner hinds and stags
- 3 2 7 Median and range of farm mean body weights of weaner hinds and stags
- 3 2 8 Distribution of bodyweight and yearling and adult stags
- 3 2 9 Bodyweights of adult stags

3 3 Velvet production

- 3 3 1 Velvet antler production from adult staags including grades and weights
- 3 3 2 Velvet antler production from 2-year-old stags including velvet grades and weights

3 4 Mortalities

- 3 4 1 Mortalities of weaner hinds and stags
- 3 4 2 Mortalities of yearling and adult stags
- 3 4 3 Mortalities of yearling and adult hinds

3 5 Deer monitoring

- 3 5 1 Faecal egg and lungworm larvae counts from weaners
- 3 5 2 Faecal egg and lungworm larvae counts from yearling and adult hinds
- 3 5 3 Faecal egg and lungworm larvae counts from yearling and adult stags
- 3 5 4 Means and ranges of serum copper and B_{12} concentrations

3 5 5 Means and ranges of glutathione peroxidase activities and serum phosphorus concentrations

4. Use of this data

This data can be used for a range of purposes

4.1 Evaluation of performance

Analysis of an individual farm will yield data on a wide range of outcomes These can be assessed against data in the tables above, to evaluate whether the outcomes are adequate, average, above normal or below normal or at the extremes, ie to provide an answer to the question Is the farmer doing OK?

4 2 Setting targets

The range of data presented allows realistic and achievable targets to be set, for example, not every farmer will be capable of achieving at the 100% level if they are currently at a low level of performance, ie a farmer achieving at the 25 percentile level could realistically achieve the 75 percentile level of productivity Alternatively a farmer performing at the bottom end of the range could realistically achieve the 50 percentile as a short to medium term goal It should be accepted that those achieving at the 100 percentile level have exceptional management ability which may not be achievable, at least in the short to medium term, by many farmers While this should not detract from the concept of striving for excellence as opposed to mediocrity, it is important for the satisfaction of the individual and the adviser that achievable goals are set

4 3 Predicting outcomes

At a given level of performance, at a given point in time, data presented can be used to extrapolate subsequent performance; eg if a given average bodyweight is achieved on 1st May the growth rate curve can be used to predict the likely bodyweight of that group at a future date Another example is that on a given farm a 2-year-old velvet antler weight may be presented, data contained in this presentation would allow a prediction of the average velvet production of that herd in future years

It must be noted, however, that estimates given may not be universally applicable because different contributing factors exist between farms, although figures provided here can be used as guidelines to be confirmed on individual properties

4.4 Assessing value in improving performance

In any given farm some areas of productivity may be poorer than others Maximum returns will usually be easily achievable if the gap between current and target levels is wide Thus on an industry basis it could be concluded that attempts to improve conception rates in adult hinds may not be rewarding given that, from this survey, adult hind conception rate was 96 8%, thus allowing little room for overall improvement Conversely, yearling hind conception rates of less than 85% indicate a great potential for improvement Thus an adviser can rank within a

property those areas for which the greatest improvement is readily achievable and therefore the greatest cost benefit received

4 5 Defining quality

As the deer industry develops it is probable that quality concepts will extend to achievement of productivity levels It may well be that quality assured farms will need to meet certain productivity goals These data can be used to help provide some of the benchmarks which may define quality

5. Summary

This brief presentation provides some data and concepts as to its use The project which evolved to provide this data has only recently been concluded, and it is intended that all of the information in detailed form will be presented in various forms, both in the spoken and written word, in due course

For those wishing to obtain a copy of the original document containing all data and analyses, enquiries should be directed to Associate Professor P R Wilson, Department of Veterinary Clinical Sciences, Massey University, Palmerston North, New Zealand

1 Audigé LJM (1995) Deer Herd Health and Production Profiling PhD Thesis, Massey University

2 Audigé LJM, Wilson PR, Morris RS (1993) Deer Herd Health and Production Profiling The Method Deer Branch NZVA Conference Proceedings No 10, Ed P R Wilson, pp78-100

3 Audigé LJM, Wilson PR, Morris RS (1994) Deer Herd Health and Production Profiling in New Zealand 1 Study Design Vet Res 25, 130-3

4 Audigé LJM, Wilson PR, Morris RS, Pfeiffer D (1994) Deer Herd Health and Production Profiling as an epidemiological tool for the study of farmed deer in New Zealand In Proc 7th Int Symp Vet Epidemiol and Econ Ed Rowlands G J, Kyule M N, Perry B D, Nairobi, Keyna *The Kenyan Veterinarian* Vol 18 pp344-6

3.1.1 : Summary of mating management strategies implemented in 1992 and 1993

		Year 1992				Year 1993			
		Total	AH	YH		Total	AH	YH	
Number of natural mating mobs*		58	52	24		56	47	21	
		min	max	mean	median	min	max	mean	median
Weaning dates		29-Feb	30-Apr	15-Mar	10-Mar	25-Feb	06-Apr	14-Mar	15-Mar
Joining hinds with sire stag(s)		01-Feb	27-Mar	18-Mar	23-Mar	01-Feb	26-Mar	09-Mar	15-Mar
Removal of sire stag(s)		28-Apr	30-Jun	17-May	16-May	30-Apr	11-Jun	17-May	13-May
Hinds									
Number of hinds/Mob	AH	4	150	40	38	8	118	37	31
	YH	2	196	27	12	1	52	21	21
Hind / Sire ratio	AH	8	82	40	42	14	71	36	36
	YH	1	51	27	25	2	71	34	33
Sire stags									
Percentage (%) of mobs mated with			AH	YH			AH	YH	
single sire			90 4	62 5			85 1	90 5	
experienced sire			90 4	66 7			78 7	61 9	
their yearling mates				8 3				4 8	
only sire(s) of pure NZ origin			46 1	62 5			31 9	23 8	
only wapiti cross sire(s)			9 6	0			8 5	4 7	
Use of back-up sire(s)			55 7	45 8			57 4	38 1	
Mixing mating mobs for back-up			26 9	16 7			36 2	9 5	
Second change of back-up mobs			5 7	4 2			15 7	4 7	
Back-up sire mobs		min	max	mean	median	min	max	mean	median
Dates of first back-up sire		02-Apr	15-May	26-Apr	23-Apr	22-Apr	26-May	05-May	05-May
Dates of second back-up sire**		03-May	14-May			05-May	29-May		26-May
Number of hinds/mob	AH	25	148	72	56	8	182	65	54
	YH	5	41	18	15	5	35	17	12
Hind / Sire ratio	AH	20	174	63	53	23	99	51	42
	YH	20	174	62	47	8	75	40	30

Note - Mating mobs were groups of hinds and sire stag(s) that were set up for mating at the beginning of the rut
- Back-up mobs were mating mobs once back-up stags were joint with hinds
- One mob of adult hinds in 1992 and 3 mobs in 1993 were artificially inseminated before being joined with the back-up sire These mobs are not included in this summary

* One mob with one yearling hind was mated with wapiti sire only

** This occurred on 2 farms in 1992 and 1993 (see Appendices 3 12 and 3 13)

AH = Adult hinds, YH = Yearling hinds

3.1.2 : Summary of weaning management practices on each farm in 1992, 1993 and 1994.

Farm code	Year	Nov-Dec**	January			February			March			April		
			1-10	11-20	21-31	1-10	11-20	21-28	1-10	11-20	21-31	1-10	11-20	21-30
1	1992	TBirth						W-T	A V-Wean	S	A W		V	W
	1993	TBirth				T		W	Wean-A V		S-H-A		Y	A V
	1994					T M		W-T	Wean Y		V Y	W		
2	1992								S	W T M	A W Wean			A
	1993								W T M-A Wean		S		A	
	1994								W A T M Wean			A		
3	1992					T			W Wean-A S			A W		
	1993				C				T W-A S Wean			A W		
	1994						T A			A W Wean		W		
4	1992					T A		A W Wean			A W		A W	
	1993	TBirth			A W			A W T Wean		S-A W			A W V	
	1994	TBirth					T W	A Wean			A W - Y		A W	
5	1992									S-A W T Wean				
	1993								W T Wean		A Y		A W Y	
	1994									A W T V Y Wean				
6	1992									S	A W Wean			A W
	1993										A-S	W T Wean		A
	1994											A W Wean		
7	1992								A W T Wean	W	S	A	W	
	1993										A T W V Wean	A W		
	1994										A T W Y Wean		A W	
8	1992									A T Wean-S	W	H-W		A
	1993								A T-W S Wean			A W		
	1994								A W T Y - Wean		W A Y			
9	1992			T A					Wean	A W		A		W
	1993					A W T		W	W-S Wean		W	A W		
	1994				T W				A Wean	Y	H			
10	1992	T							A V Wean-W				A W V	
	1993	T							A W V Wean		A W V Y			A W Y-H
	1994							A V W Wean						
11	1992								S	A T Wean		A		H
	1993						T W		S	A W Wean			A	
	1994								T A W Wean			A W Y		
13	1992								A W T	Wean-S				A-W
	1993						T			A W Wean		S	Y	YT
	1994								T V		W A C Y Wean			
14	1992			A VL					S		A W-Wean		A	
15	1992										S			A W T Wean
	1993											A W T Wean		
	1994								T A W Wean			A W		
16	1992	TBirth									A T Wean			A
	1993	TBirth									A W Wean-S			
	1994								T W		T M - H - A W Wean			

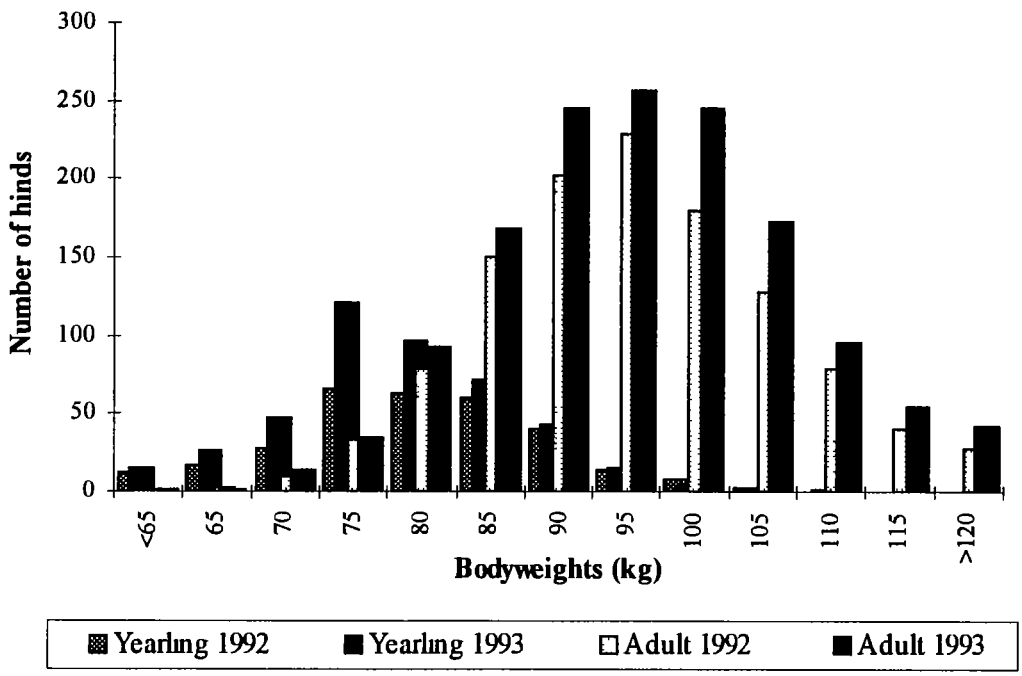
A Anthelmintic treatment; C Copper supplementation, M Matching mother-offspring; S Sampling visit; T Tagging; TBirth Tagging calves at birth; H Handling calves in yards for sorting
V Vaccination against clostridial diseases (5-in-1); VL Vaccination against Leptospirosis; W Weighing; Wean Weaning;
Y Vaccination against Yersiniosis ("Yersiniavax"); YT Treatment of clinical Yersiniosis
- hyphen Management practices separated by an hyphen have been carried out on different days
* Recording ended on April 1 1994 so data may be missing after that date from some farms
** Calving period (November-December) the previous year

3.1.3 Descriptive summary of yearling and adult hind bodyweights (kg) in 1992 and 1993.

	Yearling hinds					Adult hinds				
Year	Number of hinds	Mean	Min	Maxi	SD	Number of hinds	Mean	Min	Maxi	SD
MARCH (Premating)										
1992	311	82 8	52 0	107 0	9 4	1158	98 0	65 0	133 5	10.6
1993	442	81 3	44 0	113 0	8 5	1422	98 7	56 0	144 5	10.7
JUNE										
1992	325	84 8	53 5	114 0	10 2	1167	97 1	66 5	130 0	10.1
1993	417	85 1	59 5	118 0	8 6	1408	99 5	66 0	140 0	9 6
SEPTEMBER										
1992	177	80 5	58 0	109 5	10 4	637	94 2	57.5	136.5	10 7
1993	323	85 3	58 5	115 0	9 1	1403	98 4	68 5	135 5	9 3
NOVEMBER (Precalving)										
1992	258	91.0	52 0	119.0	11.5	925	102 9	11 5	139 0	11 6
1993	139	96 8	75 0	124 0	8 8	564	109 9	78 0	156 5	10 7

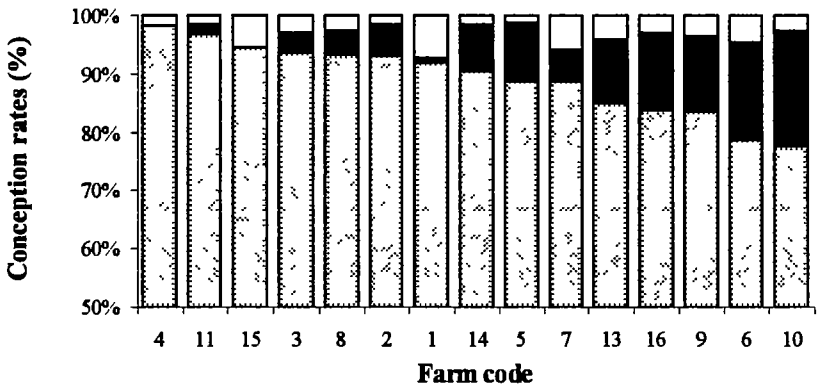
Min = minimum, Maxi = maximum, SD = standard deviation

3.1.4 Yearling and adult (>2 years) hind premating bodyweight distribution in 1992 and 1993

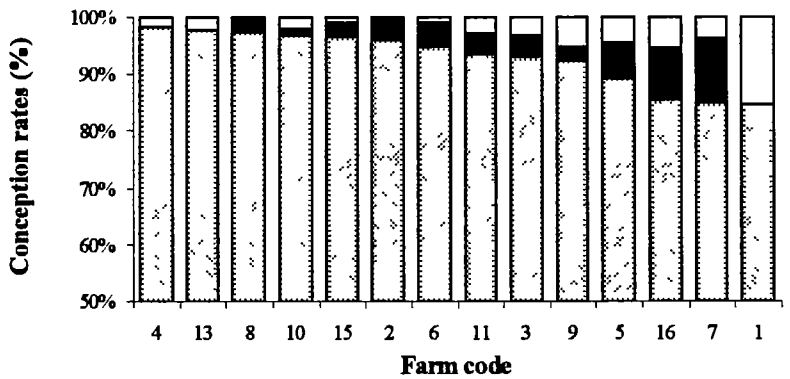


3.1.5 : **Percentages of yearling and adult hinds conceiving before May 1, conceiving after May 1 and not pregnant over all farms in 1992, 1993 and both years combined.**

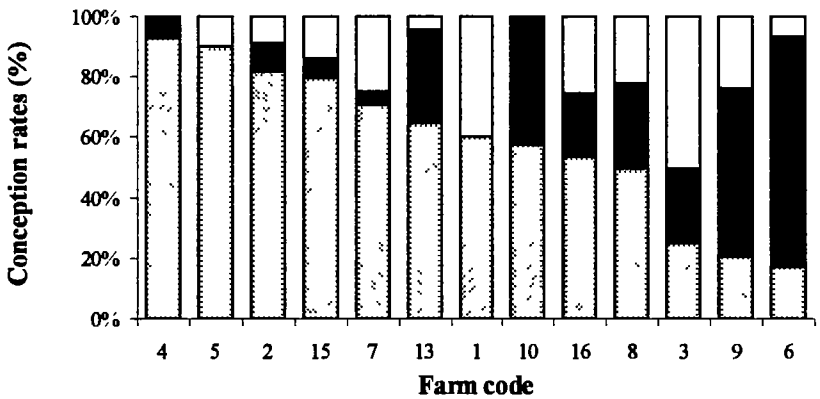
1. Adult hinds **YEAR 1992**

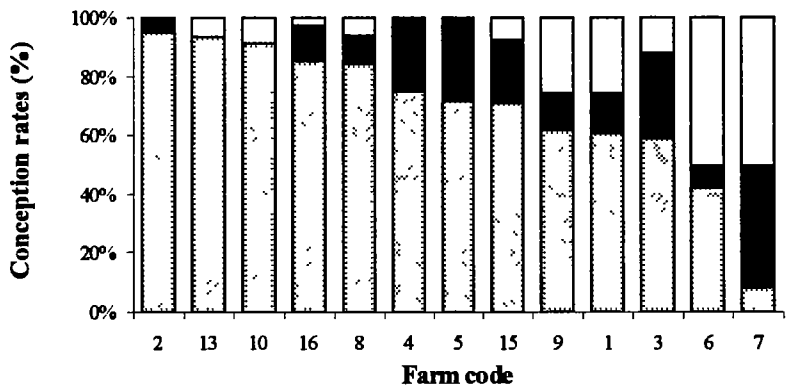


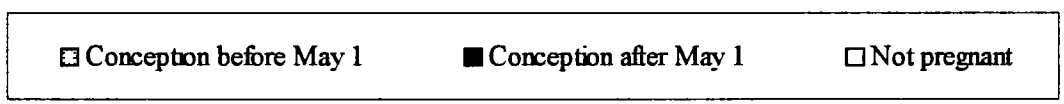
YEAR 1993



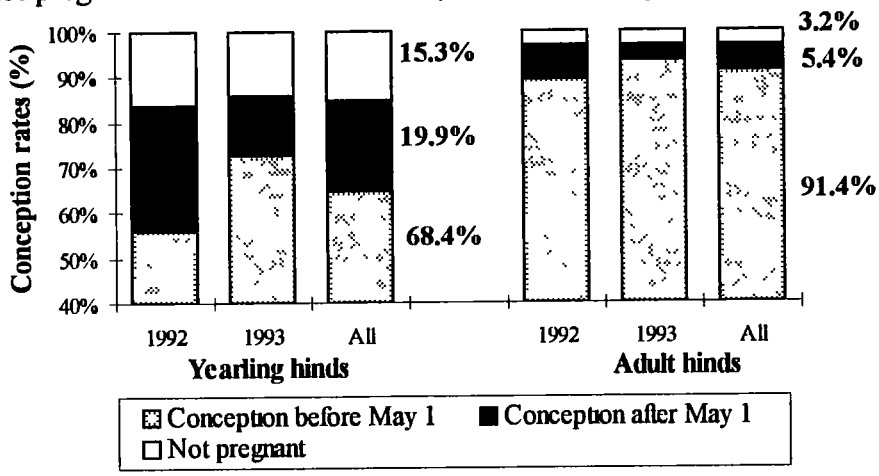
2. Yearling hinds



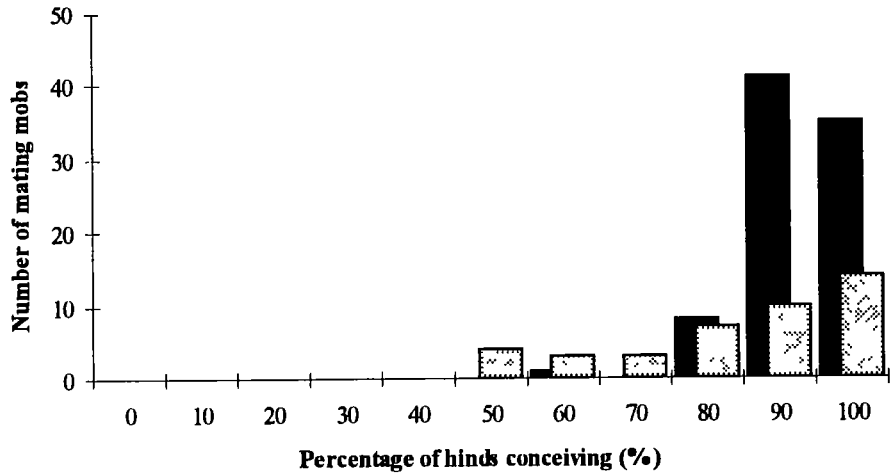


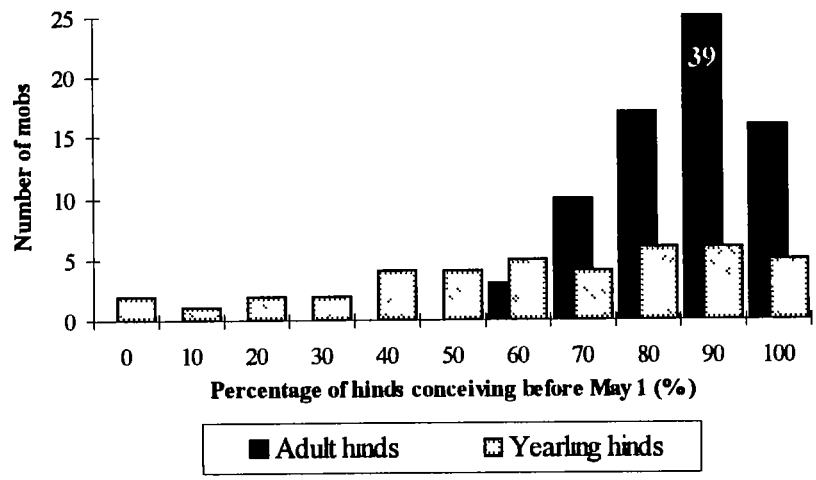


3.1.6 . Percentages of yearling and adult hinds conceiving before May 1, conceiving after May 1 and not pregnant over all farms in 1992, 1993 and both years combined

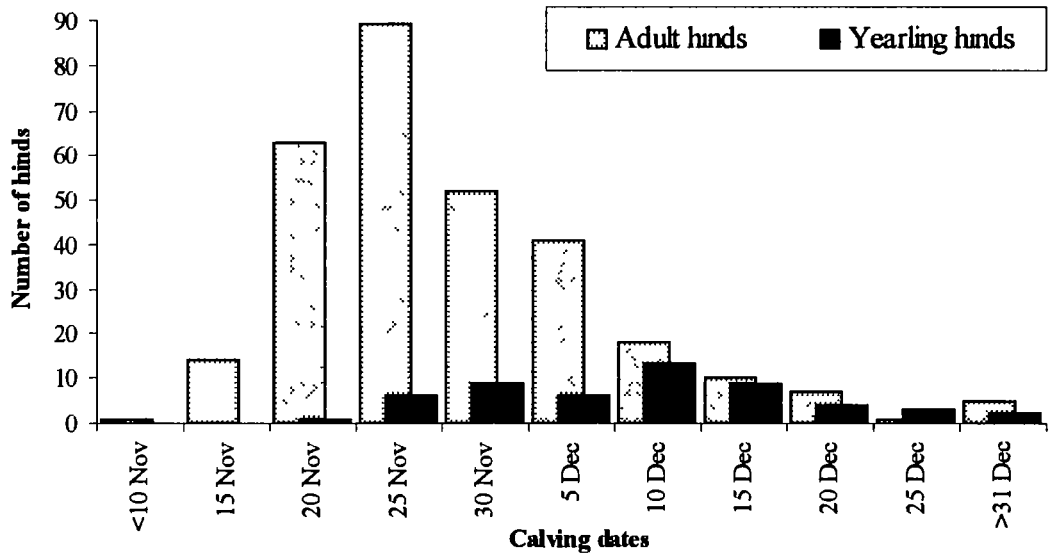


3.1.7 Distribution histogram of yearling and adult hind conception rates and early conception (before May 1) rates within mating mobs Data 1992 and 1993 combined





3.1.8 Calving date distributions of yearling (mated at 15 months) and adult hinds in 1992 and 1993. Data from 4 survey farms combined



3.1.9 Overall weaning percentage and reproductive efficiency of yearling and adult hinds in 1992, 1993 and both years combined

	1992	1993	Both years combined
Weaning percentages (%)			
Yearling hinds	81 6	86 1	84 1
Adult hinds	91 5	91 7	91 6
Reproductive efficiency (%)			
Yearling hinds	62 6	77 4	70 0
Adult hinds	81 1	88 9	83 6

Weaning percentage and reproductive efficiency are defined in the text

3.2.1 **: Means, ranges, standard deviations and quartiles of bodyweights (kg) of weaner hinds and stags both years 1992 and 1993 combined**

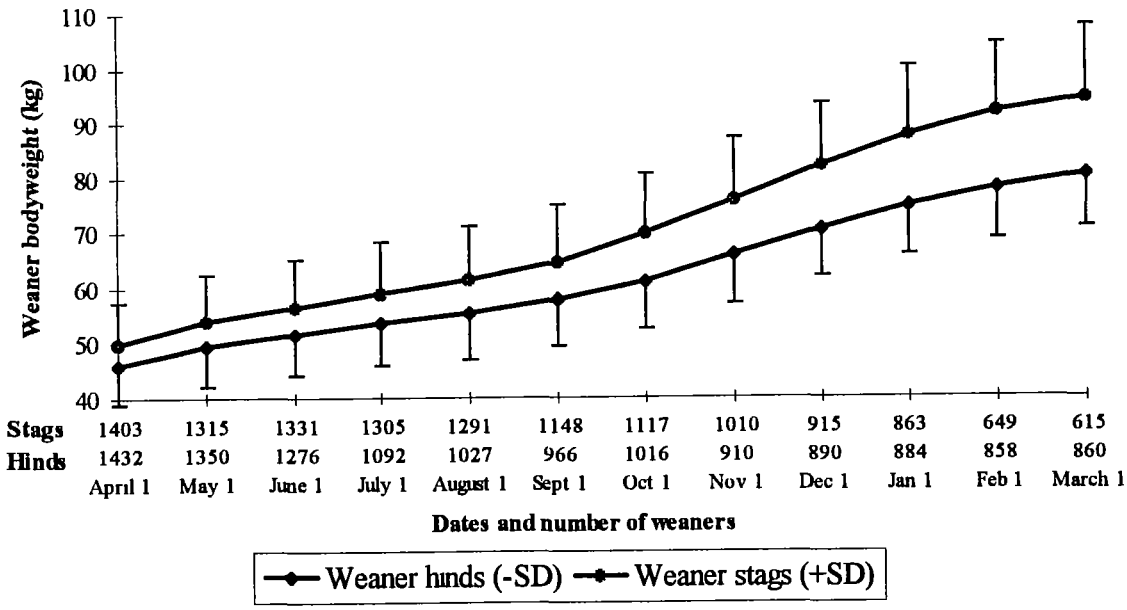
	April 1	May 1	June 1	July 1	August 1	Sept 1	Oct 1	Nov 1	Dec 1	Jan 1	Feb 1	March 1
WEANER HINDS												
Number of hinds	1432	1350	1276	1092	1027	966	1016	910	890	884	858	860
Mean	45 8	49 4	51 6	53 5	55 3	57 7	60 9	65 8	70 3	74 6	77 6	80.1
SD	7 0	7 4	7 6	7 7	8 1	8 2	8 3	8 5	8 4	8 7	8 9	9 4
Minimum	19 9	21 5	26 6	27 7	27 4	27 4	28 5	31 7	34 6	37 6	40 4	42 9
25th percentile	41.4	44 8	46 5	48 5	49 5	52 4	55 8	60 3	65 0	69 0	71 7	74 0
50th percentile	46 2	49 9	52 0	53 9	55 8	58 0	61 3	66 0	70 6	74 5	77 3	79 6
75th percentile	50 3	54 5	57 0	58 8	61 1	63 0	66 3	71 4	75 8	80 4	83 9	86 7
Maximum	64 5	73 0	73 7	75 3	76 9	81 4	86 0	103 4	101 4	109 8	107 5	113 0
WEANER STAGS												
Number of stags	1403	1315	1331	1305	1291	1148	1117	1010	915	863	649	615
Mean	50 0	53 9	56 5	58 8	61 2	64 6	69 7	75 7	81 9	87 7	91 7	94 2
SD	7 6	8 5	8 7	9 5	9 8	10 5	11 0	11 5	11 6	12 4	12 6	13 2
Minimum	22 5	23 7	26 6	28 6	31 1	34 3	37 6	42 6	48 1	50 6	53 1	55 4
25th percentile	45 1	48 6	51 2	53 0	55 0	57 3	62 2	68 0	73 8	79 8	83.4	85 2
50th percentile	50 6	54 6	56 9	59 1	61 5	64 5	69 6	75 2	81 2	86 9	91 0	93 1
75th percentile	55 4	60 0	62 2	65 4	68 0	72 0	77 2	82 9	89 1	94 4	98 6	102 0
Maximum	69 1	76 1	82 0	84 0	85 9	90 5	101 4	106 8	117 1	126 4	133 5	133 5

SD = Standard deviation

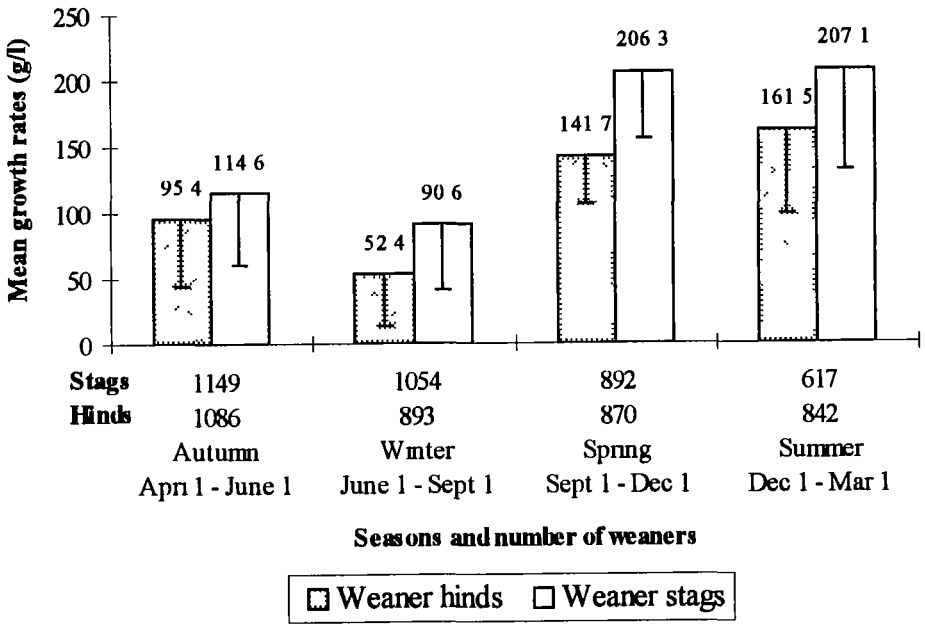
3.2.2 **: Means, ranges, standard deviations and quartiles of growth rates (g/d) of weaner hinds and stags in 1992, 1993 and both year combined**

	Weaner hinds			Weaner stags		
Period	1992	1993	Both years combined	1992	1993	Both years combined
Growth rates from April 1 to June 1						
Number of deer	474 0	612 0	1086 0	499 0	650 0	1149 0
Mean	95 7	95 2	95 4	120 0	110 4	114.6
Minimum	-66 2	-114 3	-114 3	-36 1	-42 9	-42 9
Maximum	225 7	315 4	315 4	268 9	330 8	330 8
Standard Deviation	48 7	52 6	50 9	55 0	53 9	54 6
25th percentile	64 0	61 9	62 0	83 3	76 2	78 3
50th percentile	96 0	89 3	92 5	116 2	103 7	109 2
75th percentile	128 7	125 5	127 2	156 6	145 3	150 2
Growth rates from June 1 to September 1						
Number of deer	414 0	479 0	893 0	468 0	586 0	1054 0
Mean	38 5	64 5	52 4	75 4	102 7	90 6
Minimum	-92 7	-74 6	-92 7	-87 8	-65 9	-87.8
Maximum	180 1	183 2	183 2	231 7	275 9	275 9
Standard Deviation	35 4	37 1	38 6	51 2	44 3	49.4
25th percentile	13 6	39 7	27 8	37 1	75 4	60.5
50th percentile	37 1	64 2	54.1	74 7	100 7	92 8
75th percentile	63 3	85 0	75 5	113 9	129 9	122 2
Growth rates from September 1 to December 1						
Number of deer	435 0	435 0	870 0	374 0	518 0	892 0
Mean	132 7	150 8	141 7	196 8	213 2	206 3
Minimum	8 8	58 8	8 8	16 4	31 2	16.4
Maximum	229 6	279 1	279 1	348 2	343 6	348 2
Standard Deviation	33 0	34.6	35 0	56 1	44 1	50 1
25th percentile	109 9	127 6	118 5	155 5	188 3	176 5
50th percentile	134 6	147 7	141 4	197 1	212 1	208 6
75th percentile	155 1	173 9	164 4	235 5	237 0	236 6
Growth rates from December 1 to March 1						
Number of deer	439 0	403 0	842 0	298 0	319 0	617 0
Mean	190 2	130 2	161 5	235 4	180 7	207 1
Minimum	53 5	-63 4	-63 4	39 7	-36 7	-36 7
Maximum	350 3	340 7	350 3	426 5	459 3	459 3
Standard Deviation	50 7	60 1	62 9	66 2	74 4	75 7
25th percentile	156 3	88 9	119 1	186 3	132 1	157 0
50th percentile	188 7	130 1	161 6	233 1	177 1	205 2
75th percentile	223 3	168 3	204 8	277 9	227 8	259 7

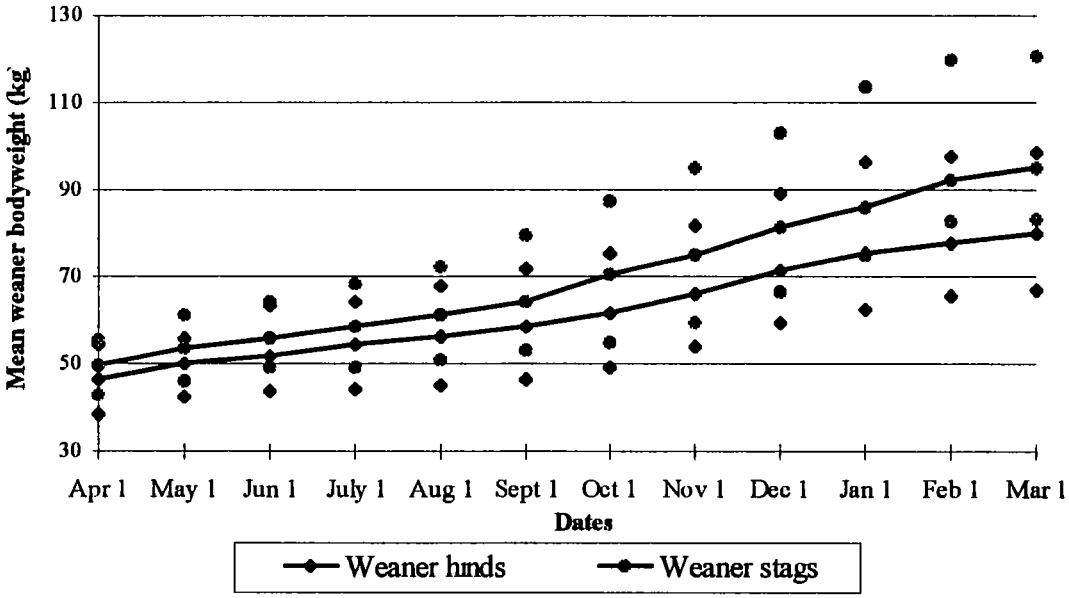
3.2.3 . Mean and standard deviation of bodyweights of weaner hinds and stags All survey farms and both years combined



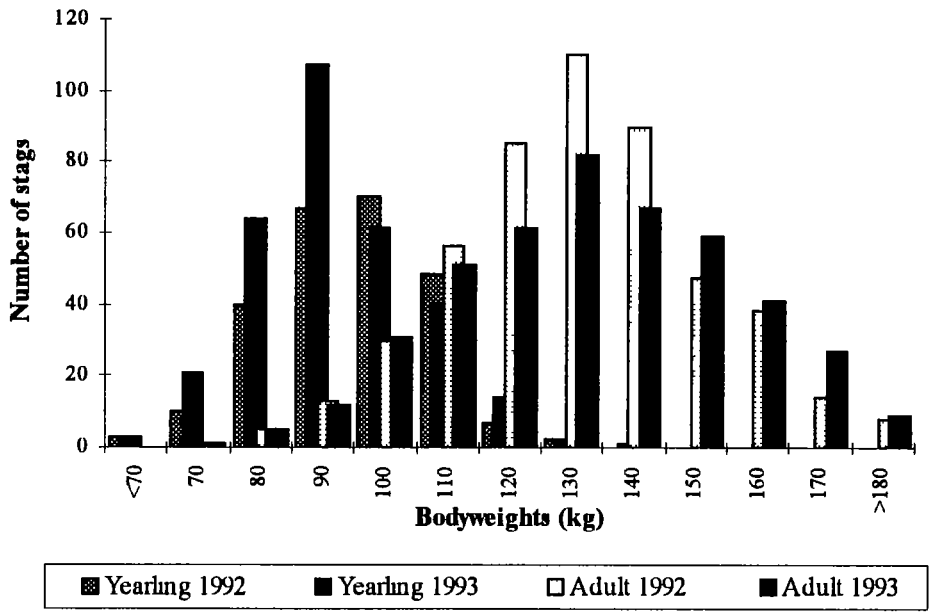
3.2.4 Mean and standard deviation of seasonal growth rates of weaner hinds and stags Data 1992 and 1993 combined



3.2.5 Median (line) and range (dots) of farm mean bodyweights of weaner hinds and stags Data 1992 and 1993 combined



3.2.6 : Distribution of bodyweight of yearling (18 months) and adult stags in June 1992 and 1993.



3.2.7 : **Bodyweights (kg) of adult stags on each survey farm in 1992 and 1993.**

	MARCH						JUNE					
Farm code	Date	Number of deer	Mean	Min	Max	SD	Date	Number of deer	Mean	Min	Max	SD
Year 1992												
1	NR						25-May	58	162 8	123 0	196 0	14 5
3	NR						03-Jun	47	130 9	102.0	168 0	18 4
4	05-Feb	3	199 0	174 0	230 0	23 3	NR					
6	NR						22-Jun	54	122 7	80 0	166 0	19 9
7	08-Mar	17	142.2	83 6	187 0	28 3	01-Jun	20	125 4	82 6	158 0	19 6
10	NR						18-Jun	23	154 5	124 5	187 5	17 6
11	NR						15-Jun	90	131 9	103 0	173 0	14 9
13	NR						26-Jun	2	143 0	125 0	161 0	18 0
14	09-Mar	13	139 8	122 0	163 0	11 7	08-Aug	74	136 8	117 0	154 0	8 9
15	NR						15-Jun	69	139 5	103 0	168 5	12.1
16	NR						03-Jul	49	123 7	92 5	167 5	18 9
All farms		33	146 4	83 6	230 0	28 2		486	136 3	80 0	196 0	19 8
Year 1993												
1	10-Mar	4	215 5	202 0	223 0	8 2	20-Jun	63	156 1	120 0	186 0	15 0
3	17-Mar	4	202 8	155 0	231 0	28 6	19-Jun	47	144 1	106 0	179 0	17 2
7	NR						05-Jun	23	130 6	72 5	167 0	20 1
10	NR						16-Jun	36	160 9	138 0	204 0	16 0
11	NR						25-May	139	136 4	95 0	242 0	22 2
15	NR						10-Jun	44	128 1	81 0	158 0	19 3
16	NR						29-Jun	86	123 1	80 5	171 0	17 9
All farms		8	209 1	155 0	231 0	22 0		438	138 3	72 5	242 0	22.7
All stags combined		41	158 6	83 6	231 0	36 7		924	137 3	72 5	242 0	21 2

	SEPTEMBER						OCTOBER - DECEMBER					
Farm code	Date	Number of deer	Mean	Min	Max	SD	Date	Number of deer	Mean	Min	Max	SD
Year 1992												
1	09-Sep	58	146 2	116 0	174 0	13 6	V	62	163 5	128 0	215 0	16 3
3	NR						V	48	147 4	112 0	197 0	19 2
7	12-Sep	20	120 8	77 0	154 0	19 7	V	22	130 3	89 5	167 0	19 8
10	02-Sep	24	156 6	126 5	198 0	20 5	V	25	176 5	147 0	221.0	19 0
11	NR						V	105	149 2	108 0	222 0	23 3
13	NR						V	17	157 5	144 0	192.0	11 8
15	NR						V	43	142 3	107 0	171 5	13 9
16	13-Sep	49	114 6	88 5	155 5	16 6	V	49	142 4	112 0	192 5	18 7
All farms		151	134 2	77 0	198 0	23 7		371	150 7	89 5	222.0	22 1
Year 1993												
1	05-Sep	63	145 2	110.5	169 0	13 1	V	53	165 1	133 0	203 0	14 9
3	NR						V	30	167 8	127 0	203 0	17 8
7	NR						V	12	135 3	114 0	178 5	15 3
10	01-Sep	29	155 1	132 0	199 5	16 7	V	28	179 2	153 0	219 0	16 6
15	NR						V	81	145 4	36 0	183 0	21 3
16	11-Sep	63	120 7	91 5	163 0	15 3	V	63	148 0	116 0	199 0	17 4
All farms		155	137 1	91 5	199 5	20 4		267	155 5	36 0	219 0	22 0
All stags combined		306	135 7	77 0	199 5	22 1		638	152 7	36 0	222 0	22 2

Note Farm 14 was not surveyed in 1993

Min = minimum, Max = maximum, SD = standard deviation, NR = Not recorded by the farmer;

V = At velvet antler harvesting

3.3.1 : **Velvet antler production from adult stags on survey farms in 1992 and 1993**
Percentage of each velvet grade (%) and average velvet weight per stag within each grade (kg)

Farm code	Number of stags	VELVET ANTLER GRADE							Average velvet weight/stag
		A - SA	B	C	D	E	Others	Not graded	
Year 1992									
1	64	32 8	48 4	15 6	1 6			1 6	
	Velvet weight	3 1	2 7	2 0	1 8			3 6	2 72
2	9		100 0						
	Velvet weight		2 1						2.09
3	46	2 2	13 0	28 3	52 2	4 3			
	Velvet weight	2 6	1 8	1 5	1 2	0 9			1 38
4	2	50 0	50 0						
	Velvet weight	2 5	2 3						2 40
5	74	4 1	24 3	37 8	25 7	2 7	5 4		
	Velvet weight	2 6	2 5	1 7	1 5	1 1	1 8		1 88
6	56	7 1	41 1	17 9	33 9				
	Velvet weight	2 7	2 0	1 8	1 4				1 80
7	22	4 5	40 9	36 4	13 6			4 5	
	Velvet weight	2 5	2 2	1 5	0 9			0 6	1 72
8	5		20 0					80 0	
	Velvet weight		2 7					2 0	2 12
9	31	3 2	32 3	38 7	25 8				
	Velvet weight	2 4	2 1	1 8	1 6				1 87
10	25	15 6	52 0	24 0	8 0				
	Velvet weight	4 0	2 5	1 8	1 6				2 43
11	107		17 8	29 0	51 4	1 9			
	Velvet weight		2 4	1 9	1 5	1 3			1 78
13	65	15 2	46 2	30 8	6 2		1 5		
	Velvet weight	2 6	2 3	2 0	1 6		2 4		2 24
14	70	2.9	78 6	18 6					
	Velvet weight	2 2	2 0	1 6					1 96
15	67	3 0	26 9	38 8	14 9			16 4	
	Velvet weight	2 7	2 1	1 7	1 6			1 5	1 77
16	49	6 1	30 6	32 7	30 6				
	Velvet weight	2.9	2 1	1 6	1 3				1 74
All farms	414	7 7	37 3	27 9	23 1	0 9	0 7	2.5	
	Velvet weight	2 9	2 2	1 8	1 4	1 1	1 9	1 7	1 94
Year 1993									
1	59	42.1	50 8	5 1	1 7				
	Velvet weight	3 2	2 5	2 1	0 9				2 76
3	30	3 3	63 3	23 3	10 0				
	Velvet weight	3 5	2 3	1 8	1 5				2 13
4	4	50 0	50 0						
	Velvet weight	2 8	2 2						2 52
5	91	14 3	48 4	25 3	11 0		1 1		
	Velvet weight	2 6	2 3	1 7	1 5		2 0		2 10
6	52	15 4	46 2	34 6	3 8				
	Velvet weight	2 6	2 1	1 8	1 5				2 06
7	12	25 0	50 0	25 0					
	Velvet weight	2 3	2 0	1 7					1 95
9	43	30 2	53 5	11 6	4 7				
	Velvet weight	2 6	2 1	1 6	1 3				2 15
10	27	29 6	55 6	14 8					
	Velvet weight	2 9	2 4	1 6					2 42
11	97	2 1	34 0	38 1	25 8				
	Velvet weight	2 7	2 3	1 9	1 6				1 97
13	62	38 7	46 8	11 3	3 2				
	Velvet weight	2 6	2 3	1 8	1 5				2 37
15	93	3 2	39 8	33 3	20 4		1 1	2 2	
	Velvet weight	3 5	2 3	1 8	1 5		0 8	1 4	1 99
16	63	3 2	47 6	38 1	11 1				
	Velvet weight	2 7	2 1	1 7	1 5				1 93
All farms	633	16 4	46 1	25 6	11 2		0 3	0 3	
	Velvet weight	2 8	2 3	1 8	1 5		1 4	1 4	2 15

Note Velvet antler grades are defined in the GIB velvet antler removal guidelines

3.3.2 : **Velvet antler production from 2y.o. stags on survey farms in 1992 and 1993**
Percentage of each velvet grade (%) and average velvet weight per stag within each grade (kg)

Farm code	Number of stags	VELVET ANTLER GRADE						Average velvet weight/stag
		B	C	D	E	Others	Not graded	
Year 1992								
1	53	24.5	28 3	41 5			5 7	
	Velvet weight	1 9	1 6	1 4			0 8	1 54
2	12						100 0	
	Velvet weight						1 1	1 14
3	2				50 0		50 0	
	Velvet weight				0 8		2 3	1 50
5	37		5 4	45 9	32 4	10 8	5 4	
	Velvet weight		0 9	1 1	0 8	0 9	1 0	0 97
6	12			100 0				
	Velvet weight			1 3				1 30
7	15	6 7	13 3	80 0				
	Velvet weight	2 5	1 3	1 1				1 26
8	1			100 0				
	Velvet weight			1 5				1 50
9	44	4 5	25 0	59 1	11 4			
	Velvet weight	1 5	1 6	1 1	1 0			1 24
10	19	5 3	15 8	42 1		36 8		
	Velvet weight	1 5	1 6	1 4		0 7		1 17
11	57			84 2	15 8			
	Velvet weight			0 9	0 8			0 89
13	7		28 6	42 9			28 6	
	Velvet weight		1 4	1 2			1 3	1 29
15	63	9 5	22 2	61 9	3 2		3 2	
	Velvet weight	1 5	1 3	1 1	0 9		0 5	1 14
16	37		5 4	75 7	18 9			
	Velvet weight		1 3	1 1	0 9			1 05
All farms	359	6 4	14 2	60 2	10 0	3 1	6 1	100 00
	Velvet weight	1 8	1 5	1 1	0 8	0 8	1 1	1 16
Year 1993								
1	47	23 4	53 2	23 4				
	Velvet weight	1 9	1 5	1 2				1 52
3	21	4 8		61 9	33 3			
	Velvet weight	1 5		1 1	1 0			1 10
5	9	11 1	55 6	11 1	22 2			
	Velvet weight	1 4	1 2	1 0	0 9			1 12
6	8	12 5	25 0	25 0	25 0		12 5	
	Velvet weight	1 9	1 7	1 2	0 9		0 5	1 25
7	16	12.5	37.5	43 8	6 3			
	Velvet weight	1 0	1 3	1 1	0 9			1 16
9	21	14 3	38 1	47 6				
	Velvet weight	1 9	1 1	1 1				1 23
10	24	8 3	41 7	50 0				
	Velvet weight	1 6	1 4	1 2				1 31
11	24	4 2	4 2	41 7	50 0			
	Velvet weight		1 2	1 1	0 9			1 01
15	67		7 5	76 1	16 4			
	Velvet weight		1 2	1 1	0 8			1 04
16	16	6 3	25 0	62 5			6 3	
	Velvet weight	1 4	1 2	1 0			1 1	1 11
All farms	253	9 1	26 1	50 2	13 8		0.8	
	Velvet weight	1 7	1 4	1 1	0 9		0 8	1 19

Note Velvet antler grades are defined in the GIB velvet antler removal guidelines

3.4.1 : **Mortalities of weaner hinds and stags (3-15 months) from April 1 1992 to April 1 1994**

Health problem		Farm codes 1	2	3	4	5	6	7	8	9	10	11	13	15	16	Total number	%	Incidence mortality rates (/100 weaners*year)
Unconfirmed	Yersinosis ?								1	4		1	13	58		77	41 0	2.40
	Lungworm								1							1	0 5	0 03
	Lameness								3							3	1 6	0 09
	Swollen joint								1							1	0 5	0 03
	Fading				1											1	0 5	0 03
	Septicaemia								1							1	0 5	0 03
	Hepatitis												1			1	0 5	0 03
	Enteritis													1		1	0 5	0 03
	Other		1			1	3	1	6				2	9	3	26	13 8	0 81
														Total unconfirmed		112	59 6	3 50
Yersiniosis		3						1					29		2	35	18 6	1 09
Misadventure	Other	1							1			2		1		5	2.7	0 16
	Broken neck			1		1	1		2		4	1		3	2	15	8 0	0 47
	Broken leg	1		1	1				2					2		7	3 7	0 22
	Injury	1														1	0 5	0 03
	Stress at weaning											1				1	0 5	0 03
														Total misadventure		29	15 4	0 91
Osteochondrosis				9												9	4 8	0 28
Malignant catarrhal fever*				1												1	0 5	0 03
Miscellaneous	Malformation									1						1	0 5	0 03
	Blind														1	1	0 5	0 03
														Total miscellaneous		2	1 1	0 06
Total losses		6	1	12	2	2	4	2	18	5	4	5	45	74	8	188	100 0	
Incidence mortality rates	(/100 weaners*year)	2.52	0 35	8 98	1 67	2.15	2 70	2.39	6 49	2.49	2.38	2 69	30 30	8 01	4 00			5 87
Number of weaners*year at risk		238	282	134	119	93	148	84	277	200	168	186	149	923	200			3202

* This weaner died on August 28 1993 (8-9 5 months)

3.4.2 : **Mortalities of yearling and adult stags from April 1 1992 to April 1 1994.**

		Farm codes														Total		Incidence mortality rates
		1	2	3	4	5	6	7	8	9	10	11	13	15	16	number	%	(/100 stags*year)
Unconfirmed	Other		1				10					2	4	1	2	20	31 7	0 81
	Fading					1	2			1						4	6 3	0 16
	Interstitial nephritis													1		1	1 6	0 04
	Black-leg						1									1	1 6	0 04
	Johnes disease ?									1						1	1 6	0 04
													Total unconfirmed			27	42.2	1 10
MCF*	Acute	1						1		2		1		5		10	15 9	0 41
	Chronic	1									1	1				3	4 8	0 12
														Total MCF		13	20 6	0 53
Misadventure	Other	1		1		1		1						4		8	12.7	0 33
	Handling stress						1				1					2	3 2	0 08
	Broken neck													3		3	4 8	0 12
	Broken leg							2								2	3 2	0 08
	Stag fight						1					1				2	3 2	0 08
	Injury	1		1										1		3	4 8	0 12
													Total misadventure			20	31 7	0 81
Miscellaneous	Facial abcesses													2		2	3 2	0 08
	Gun shot					1										1	1 6	0 04
													Total miscellaneous			3	4 8	0 12
Total mortalities		4	1	2	0	3	15	4	0	4	2	5	4	17	2	63	99 3	
Incidence mortality rates	(/100 stags*year)	1 82	2 14	1 76	0 00	1 32	9 62	4 44	0 00	2.80	1 84	1 47	2 14	2.93	0 99			2.56
Number of stags*year at risk		220	47	113	6	226	156	90	39	143	109	340	187	581	202			2459

*MCF = Malignant catarrhal fever

3.4.3 : Mortalities of yearling and adult hinds from April 1 1992 to April 1 1994.

Health problem		Farm codes 1	2	3	4	5	6	7	8	9	10	11	13	15	16	Total number	%	Incidence mortality rates (/100 hinds*year)
Unconfirmed	Fading		2				1	1	4			2	1	1	1	13	15 7	0 28
	Ataxia		1													1	1 2	0 02
	Pneumonia														1	1	1 2	0 02
	Enteritis	1				1										2	2 4	0 04
	Rumenitis					1										1	1 2	0 02
	Dystocia ?			1				1								2	2 4	0 04
	Other	1	4	2			6		1		1		2	7	1	25	30 1	0 53
													Total unconfirmed			45	54 2	0 96
Dystocia		1		1					2						4	8	9 6	0 17
Malignant catarrhal fever		2	1					1	1	1					1	7	8 4	0 15
	Chronic MCF*														1	1	1 2	0 02
														Total MCF		8	9 6	0 17
Misadventure	Other					1										1	1 2	0 02
	Drowned						7									7	8 4	0 15
	Injury	1														1	1 2	0 02
	Broken neck		2					2						1		5	6 0	0 11
	Broken leg		1						1					1		3	3 6	0 06
													Total misadventure			17	20 5	0 36
Miscellaneous	Enzootic ataxia			3												3	3 6	0 06
	Liver cancer	1														1	1 2	0 02
	Volvulus	1														1	1 2	0 02
													Total miscellaneous			5	6 0	0 11
Total mortalities		8	11	7	0	3	14	5	9	1	1	2	3	10	9	83	100 0	
Incidence mortality rates	(/100 hinds*year)	2 34	2 40	2 30	0 00	1 90	4 33	3 96	1 87	0.36	0 27	0 83	0 70	1 51	2 56			1 77
Number of hinds*year at risk		342	459	305	155	158	323	126	482	279	369	241	428	663	351			4683

* MCF = Malignant catarrhal fever

3.5.1 : **Faecal egg and lungworm larvae counts (/g) from weaners on survey farms in February - March 1992, 1993 and 1994, and in June 1992.**

Farm code	Date of sampling	Time after last drench (days)	Number of deer sampled	Number of deer with FEC *				Faecal larvae counts >0			
				0	50	100 150	>=200	Number of deer positive	Geometric mean	Min	Max
FEBRUARY - MARCH											
Year 1992											
1	17-Mar	16	10	10	-	-	-	0			
2	02-Mar		10	3	2	1	4	10	32 7	5 5	93 0
3	04-Mar		10	7	3	-	-	8	1 5	0 3	3 8
4	26-Feb	18	10	6	3	1	-	0			
5	12-Mar		10	5	1	3	1	9	7 8	1 5	72 0
6	19-Mar		10	6	1	2	1	10	24 0	0 3	162 0
7	24-Mar	15	10	6	4	-	-	1	0 3	0 3	0 3
8	18-Mar	2	10	6	2	2	-	10	25 2	3 0	148 0
9	10-Mar	24	10	5	3	1	1	9	18 9	2 0	72 8
11	03-Mar		10	2	1	5	2	10	19 1	4 0	141 3
13	11-Mar	7	10	10	-	-	-	1	0 3	0 3	0 3
14	09-Mar	54	10	5	2	1	2	8	4 5	0 3	19 5
15	23-Mar		9	4	3	1	1	9	25 5	6 3	83 5
Year 1993											
1	05-Mar		10	2	4	3	1	10	33 4	11 8	274 5
2	03-Mar		10	2	3	4	1	10	106 3	47 5	1807 5
3	16-Mar		10	2	2	5	1	10	165 4	63 0	855 8
4	28-Jan		9	8	1	-	-	6	4 4	0 8	26 0
5	03-Mar		10	-	2	5	3	10	14 4	0 3	155 5
6	18-Mar		10	1	2	1	6	10	72 0	10 8	797 3
7	22-Mar		10	6	3	1	-	10	114 9	47 5	416 5
8	04-Mar		10	2	4	3	1	10	23 6	1 5	131 5
9	02-Mar		10	6	3	1	-	9	25 3	0 8	300 0
10	30-Mar	27	10	6	4	0	0	9	1 5	0 3	7 8
11	02-Mar		10	6	2	1	1	10	31 8	4 8	262 3
15	29-Mar		10	2	4	3	1	10	35 2	4 5	157 5
16	25-Mar		10	4	3	3	-	9	29 4	1 3	196 3
Year 1994											
1	02-Mar		10	-	2	2	6	10	58 6	13 8	299 3
2	09-Mar		9	1	2	1	5	10	10 3	2 8	101 5
3	11-Mar		10	4	-	5	1	8	5 4	1 0	32 0
4	25-Feb		10	4	-	-	6	9	16 5	1 3	48 5
5	18-Mar		10	-	2	3	5	10	7 6	2 5	25 8
6	31-Mar		10	2	2	5	1	10	9 9	0 5	81 8
7	24-Mar		8	1	2	2	3	9	2 9	0 3	17 3
8	08-Mar		9	1	-	3	5	8	24 0	5 0	74 3
9	08-Mar		10	6	2	2	-	2	1 8	1 0	3 3
10	01-Mar		10	2	3	3	2	10	37 2	3 8	283 8
11	09-Mar		10	3	3	1	3	10	13 0	2 0	101 5
13	23-Mar		10	1	5	3	1	9	5 8	0 3	51 0
15	09-Mar		9	2	2	4	1	9	7 2	0 3	36 5
16	30-Mar		10	3	2	2	3	10	13 3	2 3	85 8
JUNE											
Year 1992											
1	28-May	27	9	6	2	1	-	0	-	-	-
2	27-May	4	10	10	-	-	-	0	-	-	-
3	03-Jun	1	11	5	2	1	1	8	1 3	0 3	4 8
4	02-Jun	28	10	9	1	-	-	6	1 1	0 3	2 3
5	23-Jun	8	10	7	3	-	-	1	0 3	-	-
6	24-Jun	22	10	10	-	-	-	6	3 1	1 8	10 3
7	08-Jun	37	9	6	3	-	-	6	1 6	0 3	6 3
8	18-Jun	10	10	8	2	-	-	0	-	-	-
9	15-Jun	66	10	5	2	1	2	4	0 7	0 3	2.0
10	16-Jun	1	10	7	3	-	-	4	0 5	0 3	2 3
11	04-Jun	1	10	10	-	-	-	9	3 9	0 5	22.0
13	30-Jun	22	10	7	3	-	-	8	1 2	0 3	6 0
14	22-Jun	40	10	2	-	6	2	1	1 0	-	-
15	29-Jun	3	10	9	1	-	-	10	19 7	3 0	113 5
16	01-Jul	30	10	8	1	1	-	10	10 2	1 0	576 5

* FEC Faecal Egg Count

3.5.2 : Faecal egg and lungworm larvae counts (/g) from weaner deer on survey farms in June 1993, September 1992 and 1993, and in November-December 1992**

Farm code	Date of sampling	Time after last drench if <60 days	Number of deer sampled	Number of deer with FEC *				Faecal larvae counts >0			
				0	50	100 150	>=200	Number of deer positive	Geometric mean	Min	Max
JUNE											
Year 1993											
1	31-May	26	10	3	3	3	1	6	0 9	0 3	3 3
2	01-Jun	47	10	8	1	1	-	0	-	-	-
3	03-Jun	2	10	3	-	6	1	1	0 5	0 5	0 5
4	01-Jun	27	9	5	4	-	-	8	2 0	0 3	6 5
5	08-Jun	54	10	3	3	4	-	7	8 0	0 3	41 0
6	02-Jun	33	10	7	1	1	1	10	7 2	0 5	173 3
7	07-Jun	15	10	6	3	1	-	0	-	-	-
8	26-May	9	10	10	-	-	-	0	-	-	-
9	25-May	12	10	10	-	-	-	0	-	-	-
10	09-Jun	28	10	8	1	1	-	9	1 4	0 3	20 5
11	27-May	12	10	8	2	-	-	0	-	-	-
13	24-May	21	10	8	1	1	-	10	3 4	0 8	29 3
15	13-Jun	30	10	7	3	-	-	10	7 9	2 0	44 5
16	10-Jun	4	10	-	6	4	-	7	0 9	0 3	3 0
SEPTEMBER											
Year 1992											
1	02-Sep	3	10	1	-	-	-	1	0 3	-	-
2	30-Sep		10	6	4	-	-	8	1 2	0 3	4 3
3	15-Sep	41	10	7	2	-	1	10	6 6	0 5	53 0
4	17-Sep		10	7	2	1	-	9	2 6	0 3	9 5
5	09-Sep	12	10	6	3	1	-	0	-	-	-
6	05-Oct		10	8	2	-	-	10	11 0	1 0	31 8
7	14-Sep	37	10	9	1	-	-	4	1 7	0 3	11 0
8	08-Sep		10	9	-	1	-	7	4 1	0 5	108 5
9	24-Sep		10	10	-	-	-	10	2 8	0 5	13 5
10	10-Sep	31	10	7	3	-	-	7	4 7	1 3	38 5
11	07-Sep	4	10	7	1	2	-	10	2.1	0 5	5 3
13	24-Sep		10	4	5	1	-	9	7 4	1 0	63 0
14	28-Sep		10	8	-	2	-	5	5 5	4 0	9 0
15	21-Sep	34	10	7	2	1	-	10	6 3	0 3	86 3
16	09-Sep		10	5	3	1	1	6	4 5	0 3	21 5
Year 1993											
1	15-Sep	42	9	8	1	-	-	4	0 7	0 3	3 3
2	31-Aug	19	10	9	1	-	-	0	-	-	-
3	13-Sep	3	10	8	2	-	-	0	-	-	-
4	31-Aug	17	9	5	2	2	-	5	0 7	0 3	1 8
5	14-Sep		10	7	1	2	-	0	-	-	-
6	16-Sep	21	10	8	1	1	-	4	1 4	0 5	6 3
7	05-Sep	8	10	7	3	-	-	0	-	-	-
8	20-Sep	11	10	10	-	-	-	0	-	-	-
9	21-Sep		10	10	-	-	-	0	-	-	-
10	02-Sep	23	10	5	-	4	1	5	1 1	0 3	2 5
11	08-Sep		10	5	2	2	1	9	4 0	0 3	28 0
13	07-Sep	33	10	8	2	-	-	1	0 3	-	-
15	06-Sep	25	10	9	1	-	-	8	2 2	0 3	30 5
16	01-Sep		10	9	1	-	-				
NOVEMBER 1992											
1	18-Nov	35	10	10	-	-	-	0	-	-	-
2	18-Nov		10	9	1	-	-	1	0 3	0 3	0 3
3	01-Dec	27	10	9	1	-	-	1	0 5	0 5	0 5
4	01-Dec		10	8	2	-	-	3	0 8	0 3	3 0
5	19-Nov		10	8	1	1	-	4	1 1	0 5	5 0
6	24-Nov	15	10	7	3	-	-	0	-	-	-
7	30-Nov	2	10	9	1	-	-	0	-	-	-
8	25-Nov		10	8	1	1	-	9	1 4	0 3	5 8
9	25-Nov	13	10	8	2	-	-	0	-	-	-
10	26-Nov		10	8	2	-	-	9	2.4	0 5	11 8
11	23-Nov		10	9	1	-	-	8	1 8	0 3	7 5
13	02-Dec		10	8	2	-	-	9	2 1	0 3	60 3
14	02-Dec	28	10	10	-	-	-	1	0 3	0 3	0 3
15	23-Nov	33	10	10	-	-	-	4	0 5	0 3	1 8
16	03-Dec		10	10	-	-	-	0	-	-	-

Min = Minimum, Max = Maximum

* FEC = Faecal Egg Count

** Weaners were not sampled in November-December 1993

3.5.3 : Faecal egg and lungworm larvae counts (/g) from yearling and adult hinds* on survey farms in March 1992 and 1993

Farm code	Date of sampling	Days after last drench**	Number of deer sampled	Number of deer with FEC ***				Faecal larvae counts >0			
				-	50	100	>=150	Number of deer positive	Geometric mean	Min	Max
MARCH											
Year 1992											
1	17-Mar		10	8	1	1	-	6	10	03	38
2	02-Mar		10	7	1	1	1	0	-	-	-
3	04-Mar		5	3	1	1	-	1	03	-	-
4	26-Feb		10	6	2	-	2	1	33	-	-
5	12-Mar		10	9	1	-	-	7	06	03	18
6	19-Mar		10	10	-	-	-	5	12	03	148
7	24-Mar		10	7	2	1	-	7	14	03	43
8	18-Mar		10	8	2	-	-	7	10	03	25
9	10-Mar		10	10	-	-	-	7	09	05	28
11	03-Mar		10	10	-	-	-	3	05	03	13
12	27-Feb		10	7	2	-	1	0	-	-	-
13	11-Mar	1	10	10	-	-	-	2	04	03	05
14	09-Mar		10	8	1	1	1	2	04	03	05
15	23-Mar		10	8	2	-	-	2	22	18	28
Year 1993											
1	24-Mar		10	9	1	-	-	5	07	03	33
2	23-Mar		10	8	2	-	-	3	06	03	13
3	16-Mar		10	10	-	-	-	3	08	05	15
4	15-Mar		10	10	-	-	-	7	07	03	20
5	03-Mar		10	5	4	-	1	6	10	03	45
6	18-Mar		10	6	3	-	1	8	13	03	58
7	22-Mar		10	9	1	-	-	7	19	03	53
8	10-Mar		10	10	-	-	-	7	26	03	55
9	08-Mar		10	7	2	1	-	10	31	05	218
10	30-Mar		10	7	2	1	-	6	11	03	78
11	02-Mar		10	9	1	-	-	7	15	03	55
13	06-Apr		10	10	-	-	-	10	11	03	93
15	29-Mar		10	10	-	-	-	7	12	03	28
16	25-Mar		10	7	2	1	-	3	04	03	13
SEPTEMBER											
Year 1992											
1	02-Sep		10	9	1	-	-	6	09	03	35
2	30-Sep		10	7	1	1	1	2	23	20	28
3	15-Sep		7	5	2	-	-	4	12	08	20
4	17-Sep		10	5	1	1	3	7	19	05	68
5	09-Sep		10	5	3	-	2	5	37	18	155
6	05-Oct		10	6	3	-	1	8	32	03	308
7	14-Sep	29	10	8	1	-	1	9	21	03	50
8	08-Sep		10	4	6	-	-	8	11	03	75
9	24-Sep		10	8	2	-	-	8	26	05	180
10	10-Sep		10	8	2	-	-	6	17	03	65
11	07-Sep		10	10	-	-	-	3	90	45	150
13	24-Sep		10	8	2	-	-	7	19	08	53
14	28-Sep		10	8	2	-	-	3	05	03	08
15	21-Sep	87	10	7	3	-	-	3	03	03	05
16	09-Sep		10	10	-	-	-				
Year 1993											
1	15-Sep		10	9	-	1	-	2	18	13	25
2	31-Aug		10	6	4	-	-	4	07	03	18
3	13-Sep		10	4	2	3	1	7	19	03	135
4	31-Aug		10	2	-	5	3	5	07	03	15
5	14-Sep		10	4	6	-	-	5	13	05	30
6	16-Sep		10	4	3	2	1	5	09	03	28
7	05-Sep		9	5	4	-	-	2	14	05	38
8	20-Sep		10	8	2	-	-	6	25	03	83
9	21-Sep		10	4	3	3	-	6	34	13	315
10	02-Sep		10	6	4	-	-	4	11	05	35
11	08-Sep		9	8	1	-	-	4	25	10	60
13	07-Sep		10	6	3	-	1	5	11	03	25
15	06-Sep		10	6	2	1	1	5	08	03	33
16	01-Sep	31	10	9	1	-	-	0	-	-	-

* FEC and FLC were not statistically significantly different (using Chi-square test and T-test, respectively, P>0 05) between yearling and adult hinds, so data were pooled for presentation

** Farm 13 drenched Yearling hinds only in March 1992, Farm 7 drenched Adult hinds only in August 1993
Farms 15 and 16 drenched Adult hinds in June 1992, and in August 1993, respectively
Drenching programs implemented on each farm are presented in Table 3 14

*** FEC = Faecal Egg Count

3.5.3a **Faecal egg and lungworm larvae counts (/g) from yearling (15-28 months) and adult (>28 months) stags** on survey farms in June 1992 and 1993, and November 1992**

Farm code	Date of sampling	Days after last drench	Number of deer sampled		Number of deer with FEC *				Adult stags with FLC >0**				Yearling stags with FLC >0**			
			Adult	Yearling	-	50	100	>=150	Number of deer positive	Geometric mean	Minimum	Maximum	Number of deer positive	Geometric mean	Minimum	Maximum
JUNE																
Year 1992																
1	28-May		5	5	7	2	1	-	5	1.3	0.3	6.3	4	6.9	3.0	24.5
2	27-May	4	0	5	4	1	-	-	NS				0	-	-	-
3	03-Jun	79	6	1	5	-	-	1	3	2.7	0.3	28.0	0	-	-	-
5	23-Jun		4	4	1	5	1	1	4	1.3	0.3	5.5	4	6.4	0.8	37.5
6	24-Jun		5	5	4	2	1	3	3	6.0	1.0	95.3	4	8.7	3.5	44.8
7	08-Jun	71	4	5	7	2	-	-	2	0.6	0.3	1.3	1	0.3	0.3	0.3
9	15-Jun		5	5	4	3	-	3	4	1.8	0.8	7.0	5	3.8	1.5	12.5
10	16-Jun		5	5	10	-	-	-	4	1.1	0.3	3.3	4	0.9	0.3	5.5
11	04-Jun		5	5	8	2	-	-	3	0.7	0.3	2.5	4	0.9	0.3	2.8
13	30-Jun	111	4	4	7	1	-	-	3	1.6	0.8	4.5	2	2.9	1.5	5.8
14	22-Jun		5	0	2	2	1	-	2	0.7	0.3	1.8	NS			
15	29-Jun	25-14	5	5	10	-	-	-	0	-	-	-	0	-	-	-
16	01-Jul		5	5	4	2	4	-	4	1.8	0.5	8.3	4	4.3	1.0	33.8
Year 1993																
1	31-May		5	5	8	2	-	-	1	4.5	4.5	4.5	4	2.7	1.3	13.5
3	03-Jun		5	5	7	3	-	-	1	0.8	0.8	0.8	4	2.7	0.8	6.3
5	08-Jun		4	5	7	2	-	-	3	1.3	0.5	2.8	3	1.5	0.5	4.3
6	02-Jun		1	5	2	3	-	1	0	-	-	-	3	0.5	0.3	0.8
7	07-Jun	65	5	5	9	1	-	-	1	0.3	0.3	0.3	3	0.9	0.5	1.8
8	26-May		0	5	5	-	-	-	NS				4	9.6	6.0	15.3
9	25-May		5	5	7	2	1	-	1	0.5	0.5	0.5	5	2.8	0.5	13.3
10	09-Jun		5	5	5	3	2	-	3	0.9	0.5	1.3	5	4.5	2.3	16.3
11	27-May		5	5	8	2	-	-	4	4.0	0.5	29.8	3	4.6	1.8	8.3
13	24-May		4	5	9	-	-	-	1	1.0	1.0	1.0	5	2.0	0.8	4.5
15	13-Jun		5	5	10	-	-	-	5	1.5	0.3	3.3	4	1.4	0.3	9.0
16	10-Jun		5	5	7	1	1	1	3	0.5	0.3	1.0	4	1.9	0.8	5.8
NOVEMBER 1992***																
1	18-Nov	81	5	5	10	-	-	-	2	0.4	0.3	0.5	1	1.3	1.3	1.3
2	18-Nov		0	5	5	-	-	-	NS				0	-	-	-
3	01-Dec		5	0	5	-	-	-	2	0.4	0.3	0.5	NS			
5	19-Nov		5	5	9	1	-	-	1	2.0	2.0	2.0	0	-	-	-
6	24-Nov		0	5	5	-	-	-	NS				0	-	-	-
7	30-Nov	120	5	5	8	1	-	1	1	2.0	2.0	2.0	4	2.0	0.8	4.0
10	26-Nov	93	3	3	6	-	-	-	2	0.6	0.3	1.5	2	1.1	1.0	1.3
11	23-Nov	101	5	0	3	2	-	-	1	0.8	0.8	0.8	NS			
13	02-Dec		5	5	9	1	-	-	1	0.3	0.3	0.3	2	1.0	0.3	3.8
14	02-Dec		5	0	5	-	-	-	3	0.8	0.5	1.5	NS			
15	23-Nov		5	5	6	4	-	-	1	3.0	3.0	3.0	2	0.6	0.3	1.5
16	03-Dec	81	2	0	1	1	-	-	0	-	-	-	NS			

* Faecal Egg Counts (FEC) were not statistically significantly different (using Chi-square test, P>0.05) between yearling and adult stags, so data were pooled for presentation

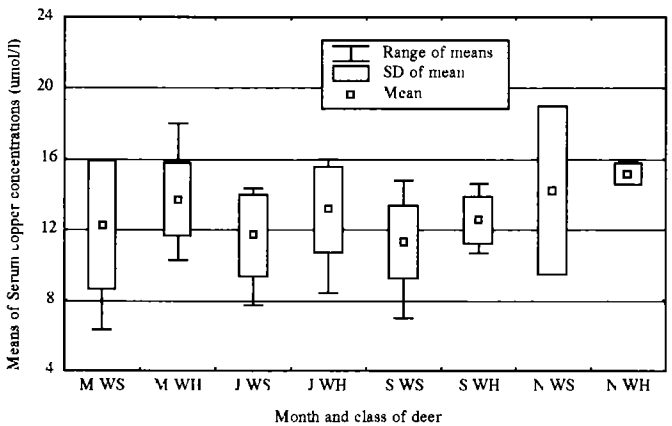
**Positive Faecal Larvae Counts (FLC) were statistically significantly different (using T-test, P<0.01) between yearling and adult stags

***Stags were not sampled in November-December 1993

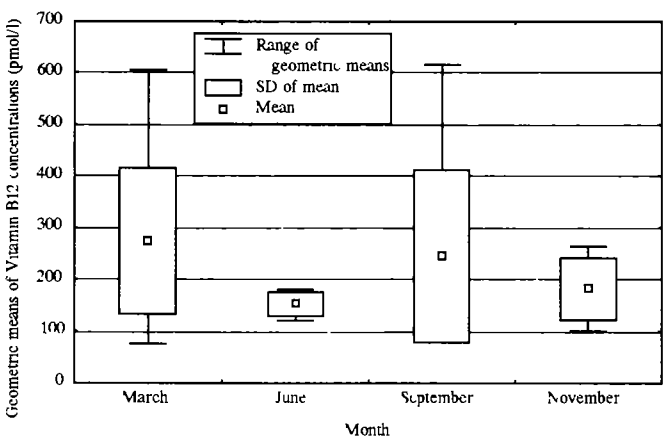
Note Actual dates of anthelmintic treatment are presented in Table 3.xxx

3.5.4 : **Means (±SD) and ranges of mean serum copper (µmol/l) and vitamin B12 concentrations (pmol/l) of 10 weaners, 10 hinds and 10 stags within farms. Data 1992 and 1993 combined.**

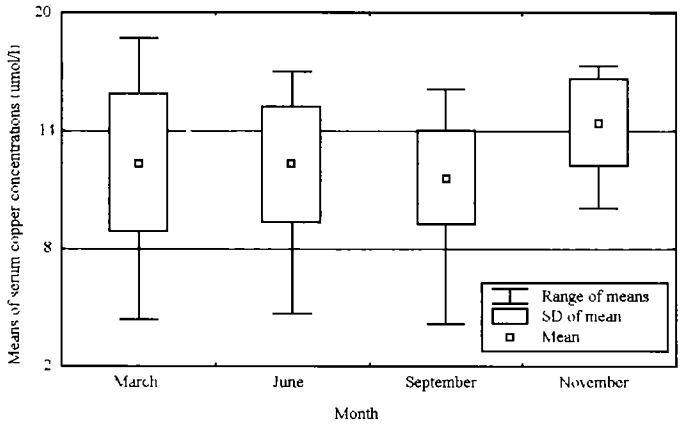
a Serum copper of weaners



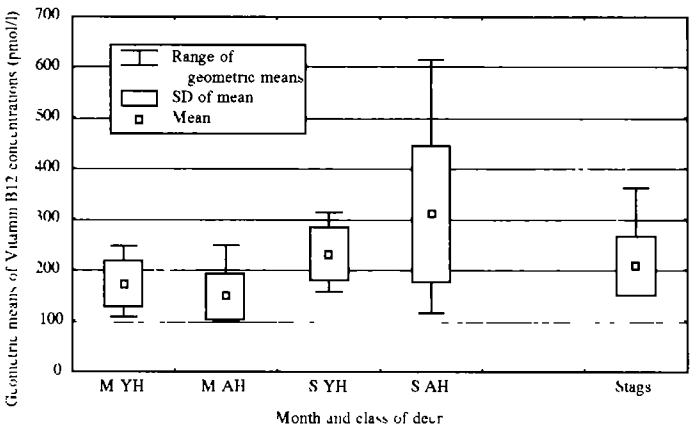
b Serum vitamin B12 of weaners



c Serum copper of yearling and adult deer



d Serum vitamin B12 of yearling and adult deer

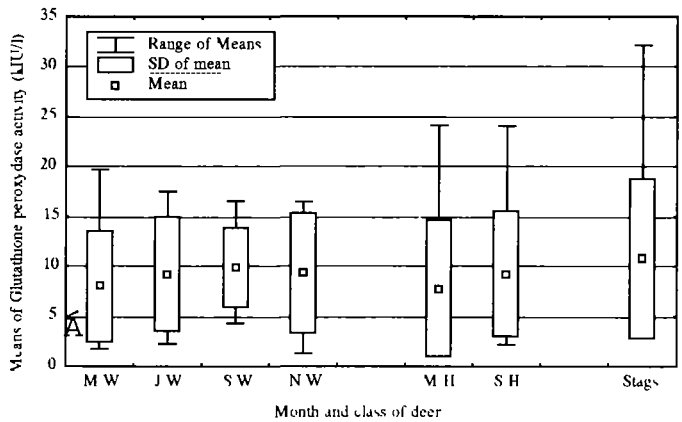


Note Data were analysed separately for weaners, hinds (>15 months) and stags (>15 months) and were pooled for presentation where appropriate when there was no statistically significant difference between month age or sex

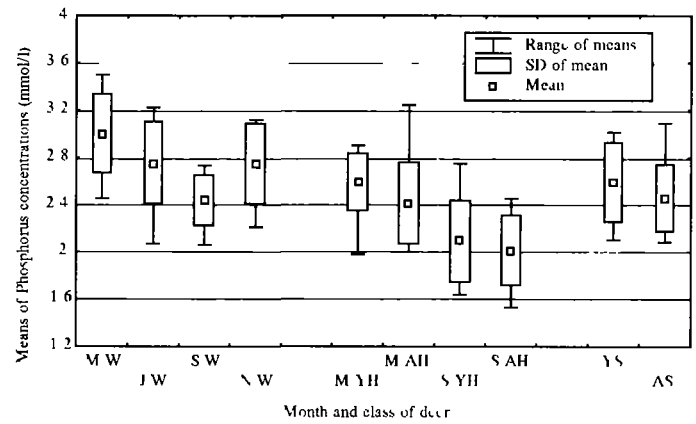
M = March, J = June, S = September, N = November, WH = Weaner hinds, WS = Weaner stags YH = Yearling hinds, AH = Adult hinds, YS = Yearling stags, AS = Adult stags

3.5.5 : Means (±SD) and ranges of mean glutathione peroxidase activities (kIU/l) and phosphorus concentrations (mmol/l) of 10 weaners, 10 hinds and 10 stags within farms. Data 1992 and 1993 combined.

a Glutathione peroxidase activity



b Serum phosphorus concentrations



Note Data were analysed separately for weaners, hinds (>15 months) and stags (>15 months), and were pooled for presentation where appropriate when there was no statistically significant difference between month, age or sex
M = March, J = June, S = September, N = November; WH = Weaner hinds, WS = Weaner stags, YH = Yearling hinds, AH = Adult hinds, YS = Yearling stags, AS = Adult stags