

ADVANCED CALVING: FIELD TRIALS OF "REGULIN" IMPLANTS
A preliminary report

P R Wilson, I H Walker, A Middelburg, D Bond, L D Staples



1. INTRODUCTION

From 1985 to 1987 there has been a considerable amount of research undertaken on advancement of calving using melatonin, both in Scotland and at Invermay, Lincoln College and Ruakura, New Zealand. This work has been recorded and referenced in detail in previous Deer Branch Course proceedings.

A workshop involving all interested New Zealand researchers was convened in August 1987 by Regulin Ltd (Australia) to review progress with melatonin experimentation in deer, and to determine future research priorities. While there still remains a lot of short-comings in our knowledge and many aspects of this technology, it was decided to undertake field trials of the slow release melatonin implant ("Regulin") on commercial deer units at the same time as further intensive research was to be undertaken at Ruakura and Invermay. This paper reports in brief on the field trials.

Originally five farms in the South Island and five in the North were to be used. However, eventually only the North Island farms were employed.

2. TRIAL DESIGN AND CONDUCT

The trials were co-ordinated by the senior author and employed practitioners under contract where appropriate to undertake insertion of implants and collection of data. Each farmer was contracted to undertake the requirements for the study.

2.1 Farms - five farms were used as detailed in Table 1.

2.2 Deer - one-year-old red (and sometimes Wapiti-X) deer were used in this study. Yearlings were chosen for the initial trial work to avoid practical difficulties with using lactating hinds. Numbers available on each property are presented in Table 1.

2.3 Treatment schedules - the timing of treatments is presented in Table 1. At each treatment each hind was given 2 x "Regulin" implants, each containing 18 mg Melatonin. Administration was by use of a Ralgro implanting gun and implants were placed subcutaneously immediately caudal to the ear.

At each treatment date an appropriate number of stags (Table 1) were given three implants by the same technique. At the last treatment period some stags were not re-treated as they were clearly in the rut by that stage.

2.4 Mating - on four properties treated and control hinds were mated together as one mob. On the fifth, treated and control hinds were mated separately, but with the same joining dates and both with treated stags. Stag joining dates and stag change-over dates are presented in Table 1.

TABLE I : Trial Design: Field Evaluation of "Regulin" Implants to yearling deer

FARM NO.	1	2	3	4	5
Location	Manawatu	Manawatu	Hawkes Bay	Hawkes Bay	Kaipara
No. treated	23	28	53	30	22
No. controls	22	28	53	31	22
No. stags treated	2	2	4	2	2
Date stags joined	8.2.88	3.2.88	9.2.88	10.2.88	30.1.88
Date stags changed	14.3.88	10.3.88	28.3.88	10.4.88	not changed
Backup stag treated(T)/ untreated (N)	N	N	N	N	-
Date stags removed	20.5.88	2.6.88	24.5.88	24.5.88	15.5.88
T & C hinds mated together (T) or separate (S)	T	S	T	T	T
Treatment dates					
1	27.11.87	16.12.87	3.12.87	3.12.88	27.11.87
2	23.12.87	18.1.87	5.1.88	5.1.88	23.12.87
3	21.1.88	23.2.87	9.2.88	10.2.88	23.1.87
Date ultrasound Scanned	11.5.88 16.6.88	ND	25.5.88	25.5.88	ND

ND = Not done

- 2.5 Observations** - the farmer was requested to observe and record all changes in behaviour and appearance of both hinds and stags. This included onset of rutting behaviour by the stags, any mating behaviour, antler growth and change in pelage.
- 2.6 Pregnancy diagnoses** - rectal ultrasound pregnancy diagnosis was undertaken on 3 farms at dates indicated in Table I. Using data collected at Massey University an estimate of the age of foetal development was made for each deer from both control and treated groups.
- 2.7 Calving** - The farmer has been contracted to record as close a possible the date of birth of each offspring from each hind, from both control and treated groups.

3. RESULTS

- 3.1 Observations** - by the third treatment, coat change in hinds was apparent in almost all treated deer. This was most clearly visible about the shoulder region.

The onset of rutting behaviour was observed late January in some stags. However, wide variation in behaviour was noted between stags.

Some stags showed premature dropping of hard antler stubs and soft antler re-growth. A number were growing velvet late June.

Farmer observation indicated oestrus behaviour in some hinds as early as the first week in March. Ultrasound foetal aging subsequently estimated first matings as early as Feb. 28.

3.2 Results of ultrasound pregnancy diagnosis - a summary of results is presented in Table II.

TABLE 2 Summary of predicted calving patterns for three of the five trial farms, based on ultrasound foetal aging techniques.

	Farm 3: White		Farm 3: Green		Farm 4		Farm 1*	
	T	C	T	C	T	C	T	C
No. of hinds mated	27	27	25	26	30	31	23	23
No. scanned	25	25	24	26	30	30	23	22
No. hinds pregnant	25	25	24	26	29	28	21	18
% pregnant	100	100	100	100	96.6	93.3	91.3	81.8
Date(s) scanned	25.5.88	25.5.88	25.5.88	25.5.88	25.5.88	25.5.88	11.5.88 16.6.88	11.5.88 16.6.88
Earliest calving	Oct 18	Nov 23	Oct 13	Nov 1	Oct 19	Nov 13	Oct 18	Nov 5
Latest calving	Dec 15+	Dec 15+	Dec 15+	Dec 15+	Dec 15+	Dec 15+	Dec 9	Dec 9
Median calving	Nov 10	Dec 2	Nov 4	Nov 19	Nov 14	Nov 27	Nov 5	Nov 28
Mean calving	Nov 10	Dec 2	Nov 5	Nov 20	Nov 13	Nov 29	Nov 6	Dec 5
Days advanced:								
First calf	36	-	18	-	25	-	18	
Last calf	0	-	0	-	0	-	27	
Median	22	-	15	-	13	-	23	
Mean	22	-	15	-	16	-	29	
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Treatments		3.12.87			3.12.87		27.11.87	
		5.1.88			5.1.88		23.12.87	
		9.1.88			10.2.88		21.1.88	

* Wapiti-X red types

+ Estimated only on basis of being only very early pregnant at scanning

Advancement of median calving dates from 13-23 days have been achieved when treated and control hinds were run together. In several instances there were a number of in-contact control deer with considerably advanced pregnancies (sympathetic or facilitated onset of oestrus). These data must be interpreted in that light. In several cases, the median calving date of untreated deer was even further advanced for those properties when compared with earlier years (35 days in one instance). It is likely, therefore, that the real advancement in median calving date is more like 30-35 days. One property has a second control group, kept distant from treated deer, which will be monitored at calving.

4. DISCUSSION

It must be noted that these are preliminary results only. They are based on estimates of foetal age determined by ultrasound scanning techniques. Final analysis requires actual calving data.

At the time of writing (mid-June) there have been no observed untoward sequelae of "Regulin" administration to either hinds or stags. However, this trial has already confirmed that antler growth cycles may be altered.

Ultrasound scanning allows a prediction of calving date and because the calving span of treated groups is spread, provides a valuable tool for the farmer to plan his grazing management at calving.

While this paper examines some of the feasibility aspects of advanced calving technology applied to deer farms, there are still a large number of questions to be answered to refine the methodology. Among the more important are the effect of different starting times, the effect of dose rate, and the number of treatments required. Clearly, the fewer the treatments needed the greater the acceptability, particularly for lactating hinds. This trial does not examine implications for this technology in lactating deer.

Another feature of vital importance is an examination of the financial viability of this technology. It is anticipated that the performance of the offspring of the current trial deer will be monitored to assess productivity advantages. Therefore full financial assessment of the advantages of this technology will not be available for some considerable time.

The management implications of this technology are discussed elsewhere in this proceedings.

5. SUMMARY

This paper describes field trial work on five properties in different localities in the North Island investigating the influence of three "Regulin" implantations at monthly intervals from November-February in yearling hinds. The treatments supplied appeared to have minimal untoward side-effects and have been successful in advancing median calving dates by up to 23 days as assessed by in utero ultrasound foetal aging techniques when compared with in-contact controls. Data presented in this paper is preliminary only, and full reports will be published at the conclusion of the study which will be calving in 1988.