Technical Addresses.
NZDFA National Conference
1982 / NAPIER.

FALLOW DEER PRODUCTION

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Introduction

Fallow deer account for about 14% of the total deer population farmed in New Zealand. Farms are generally concentrated around feral populations, particularly in the North Island.

Although originally considered by some to be impossible to farm, through persistence and adoption of pertinent management procedures, farmers are presently showing that these deer can form the basis of a viable farming operation. With the initial pioneering days receding it is useful at this stage to start measuring aspects of fallow deer production.

On-farm monitoring of fallow deer production in the Bay of Plenty and Waikato regions was initiated from Ruakura in 1980. Preliminary information is presented in this paper on reproduction and growth. Carcass data are also presented to complement those for red deer given by Drs Drew and Suttie at this conference.

The collection of these data, particularly on reproductive performance, necessitated management procedures not normally practiced with farmed fallow deer. Therefore, it is important to bear in mind that such practices may in themselves have had an effect on performance.

Reproductive performance

For the last two fawning seasons, fallow fawns on three properties were weighed and ear tagged within 24 hours of birth. Attempts to match individual fawns with their respective dams were successful in the 1981/82 season. All fawns that died between birth and weaning (mid-March)

underwent post-mortem examination.

The fallow fawning seasons were fairly synchronised events (Figure 1). In 1980/81 only 5.8% of fawns were born outside the month of December. In 1981/82 the figure was slightly higher at 10.5% (excluding six premature fawns born in November). During peak fawning up to 62-63% of fawns were born in a 10 day period in each year. Pasture management over the summer was certainly aided with a synchronous fawning period. It reduced the period of set stocking during parturition and enabled does with fawns at foot to be moved onto fresh pasture. If desired, late born fawns can be prevented by removing sire bucks early (ie mid-May - early June).

First fawners (two year old does) fawned slightly later than mixed age does. On one farm, the medium birth date (date at which 50% of fawns were born) for 22 fawns born to 2 year old does was 8 days later than for 80 fawns born to mixed age does. This did little to expand the fawning period.

Measured fawning rates were quite variable between the two seasons (Table 1).

Fawning rates between farms ranged from 73 to 81% in 1980/81 and from 87 to 98% in 1981/82. Smaller populations (50 does) tended to have higher fawning rates.

On the largest farm 12 small aborted foetuses (9.4% mated does aborting) were found on the paddocks between September and December 1981. When added to the number of fawns born the minimum conception rate was 96.1% (98.0% for MA does and 90.0% for 2 year old does.) The average minimum conception rate across three farms was 97%. Abortions were not detected on the other two monitored populations but were on two unrelated properties at the following rates : 4/20 does (20%) and 3/60 does (5%). Detection of aborted foetuses was difficult and these figures may represent an underestimate of the true abortion incidence.

Quite clearly, the fallow populations monitored in 1981/82 had dramatically improved fawning rates over 1980/81 and illustrated that conception rates close to 100% are feasible. The incidence of abortions decreased the actual overall fawning rate in 1981/82. Overcoming the abortion problem may be the key to increasing overall fawning rates on some farms. Two factors are considered the most likely causative agents, an infectious agent and stress.

In the 1981/82 season there was a lower fawn death rate (pre-weaning mortality) than the previous season (Table 1) which was perhaps attributable to a marked reduction in deaths through misadventure (Table 2) (usually fence hang-ups). All farmers involved accepted the need to provide an effective fawn proof barrier around fawning paddocks and subsequently few deaths occurred in the fences.

Premature (born prior to December and poorly developed) and undersized (under 3.0 kg) fawns contributed signficiantly to the mortalities in the 1981/82 season (Table 2). As most of these occurred in the same population as did the abortions, it is conceivable the two events are related and further investigation is underway.

Deaths through starvation (18% and 21% of all mortalities in 1980/81 and 1981/82 respectively) provide a possible indication of a disturbance effect (ie mismothering). In terms of fawns born these figures represent 3.6% and 3.2% for respective seasons. Other factors can lead to starvation; eg. dam ill-health, dam inexperience and pirating : all of which have been observed with the fallow monitored; however, without constant observation it is difficult to proportion the effect of each. The starvation mortality was, in all cases, within the farmers' tolerance of the monitoring exercise.

Little data are available at present on the reproductive performance of

first fawners (2 year old does). No first fawners were monitored 1980/81 and only 30 in 1981/82. It would appear that fawning rates were very close to those of mature does but preweaning fawn mortality was almost twice that of older does and fawn birth weights were 20% lighter.

Growth

A total of 172 fallow fawns, across four Waikato/BOP farms, were weighed every 2 months from March 1981 (3 months old) until March 1982 (15 months old). On two farms the fawns were weighed and tagged at birth and on the other two farms they were monitored from March weaning onwards. These with average liveweights on older classes of stock are given in Table 3. Fifteen month old bucks attained up to 70% and does up to 85% of mature body weight. For this reason, the preweaning and postweaning growth of bucks and does up to their first rut (16-17 months) is important in terms of meat production and reproductive efficiency.

The average weight for age curves and the seasonal growth rates (kg/week) of 86 bucks and 86 does born in 1980/81 are presented in Figure 2. The weight for age curves represent the average liveweights extrapolated to the start of each season and the growth rates were calculated by dividing the liveweight difference between the start and end of a season by the length of that season.

Preweaning growth rates were in excess of one kilogram/week for both buck and doe fawns, dropping back to post-weaning growth rates of 0.5 kg/week in autumn and 0.25 kg/week in winter. In late winter and spring, however, bucks grew considerably faster than does. This was observed in all four populations and signifies an important period for meat production in fallow deer. Summer growth rates, however, were poor for both sexes, but probably relect an unusually dry summer in 1981/82.

Carcass evaluation

With limited returns from fallow velvet an evaluation of meat production is critical to the farmer. Data are presented from two farms on carcass characteristics as an aid to assessing meat production on any given farming situation.

Eighty bucks from two farms, ranging from yearlings to mature (4+ year old) were transported 200 km to a DSP and slaughtered in late January 1982.

Carcass bruising was inconsequential and no hot carcass trimming was necessary. A brief summary of liveweight, carcass and dressing out data are presented for each age group in Table 4.

Dressing out percentages vary depending on the period of "emptying-out" or withholding in the yards prior to slaughter. They ranged from 56-58% for paddock liveweight to 60-62% for 12 hour starved liveweight.

The carton weight (cold carcass minus fat and bone waste) is equivalent to the total saleable yield (not taking into account by-products). There was little increase in saleable yield between age groups which reflects the increasing fat waste with increasing age. However, the degree of fat trim is subjectively assessed in the GPH and consequently batches of mixed aged bucks may be trimmed differently. This was the case for the Ruakura and Massey batches. Trimming of most Ruakura cold carcasses was considered necessary leading to a reduction in the saleable yield (in terms of % carton weight to cold CWT) with increasing age groups (Table 4). The time required to cut and pack excessively fat bucks is nearly double that required for lean bucks. Over 120 kg of fat was trimmed to waste off the 30 oldest bucks.

It is probable, however, that in future most bucks will be slaughtered at 12-15 or 24-27 months of age. Overfatness is unlikely to be a problem at these ages.

Summary

: synchronous fawning period

: high conception rates

: pre-weaning fawn and pre-natal losses are main areas for improvement

: rapid growth to puberty in both bucks and does

: high saleable yield of meat

: over-fatness of older bucks can be a problem.

Acknowledgements

The enthusiasm, help and encouragement of the following fallow deer farmers are gratefully acknowledged: G.H. Hope, J. Wildman, M. Smythe, J. Robertson and P. McNeil. Special thanks to the manager and staff of N.Z. Game Meats Ltd, South Kaipara Head, for generous assistance during carcass evaluation studies.

Table 1: Reproductive performance of monitored fallow deer populations.

Season	does	fawns (%)	fawn deaths	weaning %
1980/81	182	139 (76.4)	27 (19.4)	61.5
1981/82	210	191 (91.0)	29 (15.2)	77.6

Table 2: Causes of fallow fawn deaths

Cause of death	1980/81		1981/82	
	n	%	n	%
Misadventure	10	38	2	7
Premature/undersized	3	11	12	42
Dystocia	3	11	7	24
Starvation	5	18	6	21
Pneumonia	2	7	0	0
Diarrhoea	1	4	0	0
Other infection	2	7	0	0
Abnormality	0	0	1	3
Unexplained	1	4	1	3
Total deaths	27	100	29	100

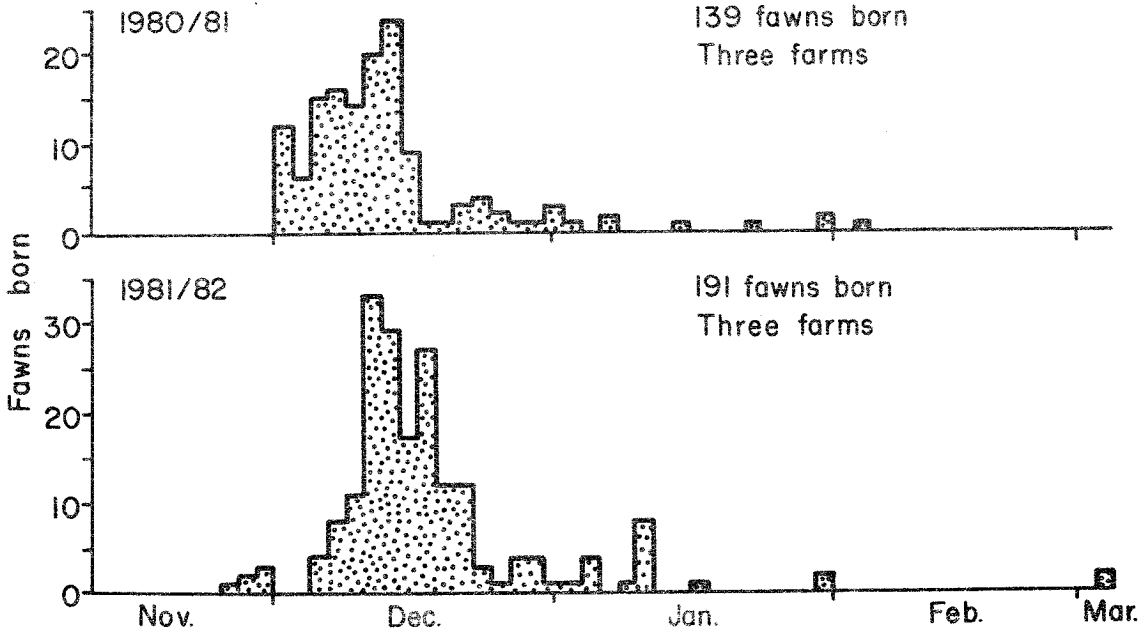
Table 3: Range of average liveweights (kg) of farmed fallow deer

	Birth Dec.	3 mths March	12 mths Dec.	15 mths March
Bucks	3.9-4.8	17-21	39-45	42-53
Does	3.5-4.0	15-19	30-33	32-36

	24 mths Dec.	36 mths Dec.	4+ years Dec.	4+ years March
Bucks	50-56	55-60	61-68	70-75
Does	-	-	-	37-40

Table 4: Liveweight, carcass and dressing out data for fallow bucks slaughtered in January 1982.

	Age (Years)					
	1		2		3	4+
	Ruakura	Massey	Ruakura	Massey	Ruakura	Ruakura
Number slaughtered	8	8	14	8	12	30
Liveweight (kg)	49.8		57.8		63.3	70.6
Starved LWT (kg)						
: 4 hrs		43.3		59.4		
: 12 hrs	46.3		52.8		59.1	65.8
Cold carcass wgt (kg)	27.7	25.0	33.1	35.8	36.3	40.9
Dressing out (%)						
(a) Cold CWT/LWT	56		57		57	58
(b) Cold CWT/Starved	60	58	63	58	61	62
Fat waste (% cold CWT)	5.8		7.4		10.1	13.4
Carton wgt (kg) = saleable yield	23.5	22.2	27.6	31.7	28.7	31.2
Saleable yield (% of cold CWT)	85	89	83	89	79	76


1980/81
139 fawns born
Three farms
1981/82
191 fawns born
Three farms
Fawns born
0
10
20
30
Nov.
Dec.
Jan.
Feb.
Mar.

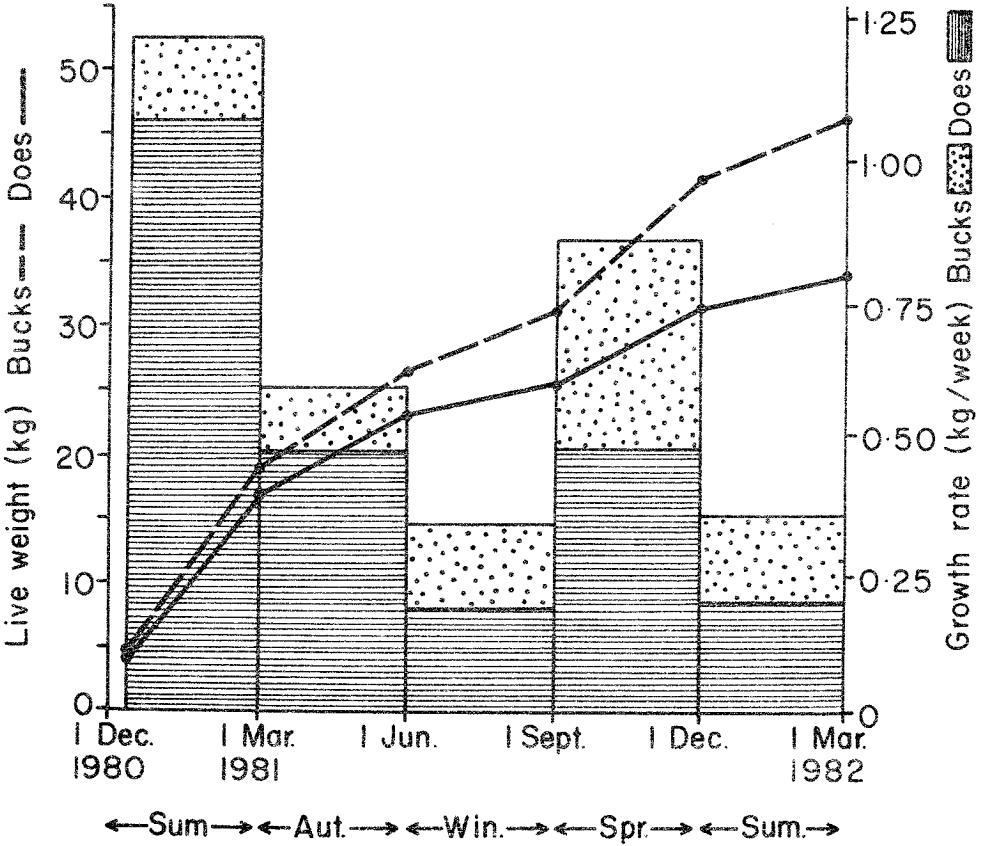

Live weight (kg) Bucks Does
Growth rate (kg/week) Bucks Does
50
40
30
20
10
0
1·25
1·00
0·75
0·50
0·25
0
1 Dec. 1980
1 Mar. 1981
1 Jun.
1 Sept.
1 Dec.
1 Mar. 1982
Sum
Aut.
Win.
Spr.
Sum.

Figure 1: Frequency of fallow fawn births for 1980/81 and 1981/82 seasons.

Figure 2: Weight for age curves and seasonal growth rates for 172 fallow fawns born in Dec. 1980