

New Zealand Society of Animal Production online archive

This paper is from the New Zealand Society for Animal Production online archive. NZSAP holds a regular annual conference in June or July each year for the presentation of technical and applied topics in animal production. NZSAP plays an important role as a forum fostering research in all areas of animal production including production systems, nutrition, meat science, animal welfare, wool science, animal breeding and genetics.

An invitation is extended to all those involved in the field of animal production to apply for membership of the New Zealand Society of Animal Production at our website www.nzsap.org.nz

[View All Proceedings](#)

[Next Conference](#)

[Join NZSAP](#)

The New Zealand Society of Animal Production in publishing the conference proceedings is engaged in disseminating information, not rendering professional advice or services. The views expressed herein do not necessarily represent the views of the New Zealand Society of Animal Production and the New Zealand Society of Animal Production expressly disclaims any form of liability with respect to anything done or omitted to be done in reliance upon the contents of these proceedings.

This work is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](http://creativecommons.org/licenses/by-nc-nd/4.0/).



You are free to:

Share— copy and redistribute the material in any medium or format

Under the following terms:

Attribution — You must give [appropriate credit](#), provide a link to the license, and [indicate if changes were made](#). You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

NonCommercial — You may not use the material for [commercial purposes](#).

NoDerivatives — If you [remix, transform, or build upon](#) the material, you may not distribute the modified material.

<http://creativecommons.org.nz/licences/licences-explained/>

Effect of "Ralgro" on growth, body composition and behaviour of lambs, heifers and bulls

J. J. BASS, K. T. JAGUSCH, K. R. JONES, T. F. REARDON, AND A. M. DAY

Ruakura Agricultural Research Centre
Ministry of Agriculture and Fisheries, Hamilton

ABSTRACT

The effect of Ralgro on growth and carcass composition was examined in 3 lamb trials, in young and 15-month old bulls and in spayed and entire heifers. There was no consistent growth response to Ralgro in any of the trials, except for the spayed heifers. Increased meat percentage from Ralgro was found only in young bulls. Aggressive bull behaviour was controlled by Ralgro only in young bulls from April-July at approximately 8 to 11 months of age.

INTRODUCTION

Growth promotants are regularly used throughout the world to improve live-weight gain, feed efficiency and animal health of both sheep and cattle (Heitzman, 1979). Ralgro*, the only growth promotant currently registered for use in New Zealand, contains the active ingredient zeranol, which reportedly stimulates growth by increasing growth hormone and/or insulin production (Olsen *et al.*, 1977).

Ralgro has been shown to stimulate growth in steers (Roche *et al.*, 1978), heifers (Staigmiller *et al.*, 1978), bulls (McKenzie, 1983) and lambs (Wilson *et al.*, 1972). However in a number of other trials the effect of Ralgro on growth has been minimal (Thiex and Embry 1972; Jordan and Hanke 1979).

The effect of Ralgro on carcass composition of sheep (Wilson *et al.*, 1972) and cattle (Borger *et al.*, 1973) has been small. The major effect of Ralgro has been on the reproductive system (Riesen *et al.*, 1977), and in young bulls it also reduces sexual behaviour (McKenzie, 1983). The present studies examined the effect of Ralgro on growth, body composition and behaviour of lambs, heifers and bulls.

MATERIALS AND METHODS

Details of species, age and implanting regime for all trials are presented in Table 1. Animals in all trials were run on pasture and only cattle during winter were given hay or silage. At slaughter, carcass composition was determined by weight of meat, fat and bone, and fat depths. The weights of the gonads and genital tract were also recorded in some trials. Behaviour of bulls was determined by subjectively scoring fence, gate and pasture damage, fighting and ease of movement. Individual subjective scores were combined to give an index of behaviour with high scores indicating behavioural problems. Subjective scores were estimated daily by the same experienced stockman. The riding by bulls was estimated by using a leg wear score similar to that reported by McKenzie (1983).

Analysis of the data accounted for breed, birth rank, age and dam age where applicable. Covariance was used to adjust for age and carcass weight.

RESULTS

Trials 1, 2 and 3 (lambs)

Ralgro had no effect on live or carcass weight in ewe,

TABLE 1 Experimental details

	Trial					
	1	2	3	4	5	6
No. animals	259	389	132	90	53	63
Sex	Rams, ewes, wethers	Ewes, wethers	Ewes, wethers	Bulls	Bulls	Heifers
Implant (mg)	12	12	12	36	36	36
Age at 1st implant (weeks)	7	7	18	16 and 29	60	54
Implant interval (weeks)	10	—	—	10	—	—
Age at slaughter (months)	4 to 8	3	6	15 to 16	18 to 22	18 to 20

* RALGRO® IMC Corp. U.S.A., Distributed by Wellcome N.Z. Ltd Auckland.

TABLE 2 Effect of Ralgro on lambs (Trial 1)

		December		February		March	
		Ralgro	Control	Ralgro	Control	Ralgro	Control
Carcass wt	Ram	12.4	12.2	15.3	14.7	16.5	15.8
	Wether	12.3	11.9	13.9	14.1	15.1	15.9
	Ewe	11.7	10.9*	14.4	14.2	14.3	15.0
Fat depth "C" (mm)	Ram	1.73	1.45	3.39	2.95	3.92	2.91
	Wether	1.98	1.69	3.29	2.34	3.31	2.40
	Ewe	2.54	2.41	3.68	3.43	3.50	4.20

TABLE 3 Effect of Ralgro on lambs (Trials 2 and 3)

	Ewe		Wether	
	Ralgro	Control	Ralgro	Control
Trial 2				
Carcass wt	11.7	11.9	12.1	12.2
Tissue depth GR	6.7	7.7	6.2	6.3
Trial 3				
Carcass wt	9.6	9.8	10.1	9.6
Tissue depth GR	4.4	4.7	5.1	3.9*

wether or ram lambs (Tables 2 and 3). The exception was the treated ewes in Trial 1 which were heavier than their controls in December. No consistent differences in carcass fatness were found between Ralgro treated and control lambs. The March slaughtered rams (Trial 1) had thicker fat depths (C) over the loin than their controls, and treated wethers (Trial 3) had thicker GR measurements. Uterine weights were increased, and ovarian, testes and epididymal weights were reduced by Ralgro (Trial 1) whereas udder weights were not affected, although 2 lambs started lactating.

TABLE 4 Composition of bull carcasses

	Control	Ralgro	
		3 month	6 month
Carcass wt (kg)	223.2	225.6	229.2
Side composition (kg) (adjusted for hot carcass weight)			
meat	79.4	81.1	80.4**
bone	24.3	23.2	23.4**
trimmed fat	7.9	7.5	7.9

TABLE 5 Composition of heifer carcasses

	Entire	Ralgro Entire	Spayed	Ralgro Spayed
Carcass wt (kg)	143.3	150.5	135.0	150.1*
Left hindquarter composition (kg) (adjusted for hot carcass weight)				
meat	48.5	47.7	47.3	47.3
bone	12.9	13.1	13.5	12.5
trimmed fat	8.5	8.1	8.4	8.6

Trials 4 and 5 (bulls)

In Trial 4 Ralgro had no effect on final live weight or carcass weight of young bulls, regardless of when they were first implanted. However treated bulls did have 1 to 1.7 kg more meat and 0.9 to 1.1 kg less bone in their left sides than the controls at the same carcass weight (Table 4).

Behavioural problems were not noted in any of the bulls until March/April at approximately 7 to 8 months of age. The control bulls then achieved behaviour scores over 8, indicating pasture and fence damage had occurred. Ralgro treated bulls maintained their low scores of 4 and below during this period. Leg wear scores also indicated less riding activity in Ralgro bulls than controls over the same period. By September the Ralgro bulls had similar high behaviour and leg wear scores as the control bulls and these high behavioural scores of treated and non-treated bulls were maintained until November/December. In trial 5 Ralgro had no effect on growth, carcass composition or behaviour on 14 to 15 month old bulls. However the untreated bulls were also not very active.

Trial 6 (heifers)

Ralgro increased the rate of growth of spayed heifers but not the entire (Table 5). Ralgro had no effect on weight of meat, bone or trimmed fat of the carcass.

DISCUSSION

The growth response of lambs to Ralgro in these trials was small and inconsistent, which is in agreement with findings of Jordan and Hanke (1979) and there were no consistent effects on carcass composition. The major effects of Ralgro were on the reproductive

system with the testes being reduced, as previously reported by Riesen *et al.* (1977), while in the female ovarian weights were reduced and uterine weights increased.

In the young bull trials, unlike those reported by McKenzie (1983), Ralgro failed to stimulate growth at slaughter and we were unable to confirm better muscling in the hindquarters of Ralgro bulls. The results in this study found more muscle and less bone in the treated carcass but these differences were mainly confined to the forequarter. These results await confirmation from this year's trials. Ralgro controlled bull behaviour from April to July in the present trials, whereas McKenzie (1983) found behaviour was controlled from July-November. The difference between these New Zealand trials may be associated with differences in live weight between trials, but this seems unlikely as no dose-dependent relationship appears in the recent trials at Ruakura. Older bulls' growth rates were not affected by Ralgro in this trial or in the results reported by Thiex and Embry (1972).

Entire heifers in this study failed to respond to Ralgro.

CONCLUSIONS

In the trials reported Ralgro failed to stimulate growth in lambs, bulls or entire heifers. Ralgro was only able to control bull behaviour from April-July when approximately 8 to 11 months of age.

ACKNOWLEDGEMENTS

To W. Carter, P. Fowke, abattoir, beef and sheep nutrition staff at Ruakura and farm staff at Tokanui Research farm and to Welcome NZ Ltd for technical and financial assistance.

REFERENCES

- Borger M. L.; Wilson L. L.; Sink J. D.; Ziegler J. H.; Davis S. L. 1973. Zeranone and dietary protein level effects on live performance, carcass merit, certain endocrine factors and blood metabolite levels of steers. *Journal of animal science* **36**: 706-711.
- Heitzman R. J. 1979. The efficacy and mechanisation of action of anabolic agents as growth promoters in farm animals. *Journal of steroid biochemistry* **11**: 927-930.
- Jordan R. M.; Hanke H. E. 1979. Effect of ralgro implants on growth of lambs and foals. Abstract. 71st Meeting American Society of Animal Science: 192.
- McKenzie J. R. 1983. Effects of zeranone implants on behaviour, growth rate and carcass characteristics of Friesian bulls. *New Zealand journal of experimental agriculture* **11**: 225-229.
- Olsen R. F.; Wangsness P. J.; Martin R. J.; Gahagan J. H. 1977. Effects of zeranone on blood metabolites and hormones in wether lambs. *Journal of animal science* **45**, 6: 1392-1396.
- Riesen J. W.; Becler B. J.; Abenes F. B.; Woody C. O. 1977. Effects of zeranone on the reproduction system of lambs. *Journal of animal science* **45**: 293-298.
- Roche J. F.; Davis W. D.; Sherington J. 1978. Effect of trenbolone acetate and resorcylic acid lactone alone or combined on daily live weight and carcass weight in steers. *Irish journal of agriculture research* **17**: 7-14.
- Staigmiller R. B.; Bellows R. A.; Short R. E.; Carr J. B. 1978. Zeralonone implants in replacement heifers. *Journal of animal science* **47** (Suppl. 1): 392.
- Thiex P. J.; Embry L. B. 1972. Feedlot performance of bulls and the response to diethylotibestrol or zeranone. 16th South Dakota Cattle Feeders Day Report. 68-70.
- Wilson L. L.; Varela-Alvarez H.; Rugh M. C.; Borger M. L. 1972. Growth and carcass characters of rams, cryptorchids, wethers and ewes subcutaneously implanted with zeranone. *Journal of animal science* **34**: 336-338.