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Te Ahuwhenua, Te Kai me te Whai Ora. Tuatahi

Donaghys Industries Ltd
Lamb Probiotic Trial 2008

B5 Maori Incorporation, Whangara, Gisborne

John Gordon, Mataroa,Taihape

Bryan Jamison, Waiau, North Canterbury

Mike Anderson, Fairlie, South Canterbury

T.L Knight and CL Goulter, AgResearch Ltd, Lincoln.

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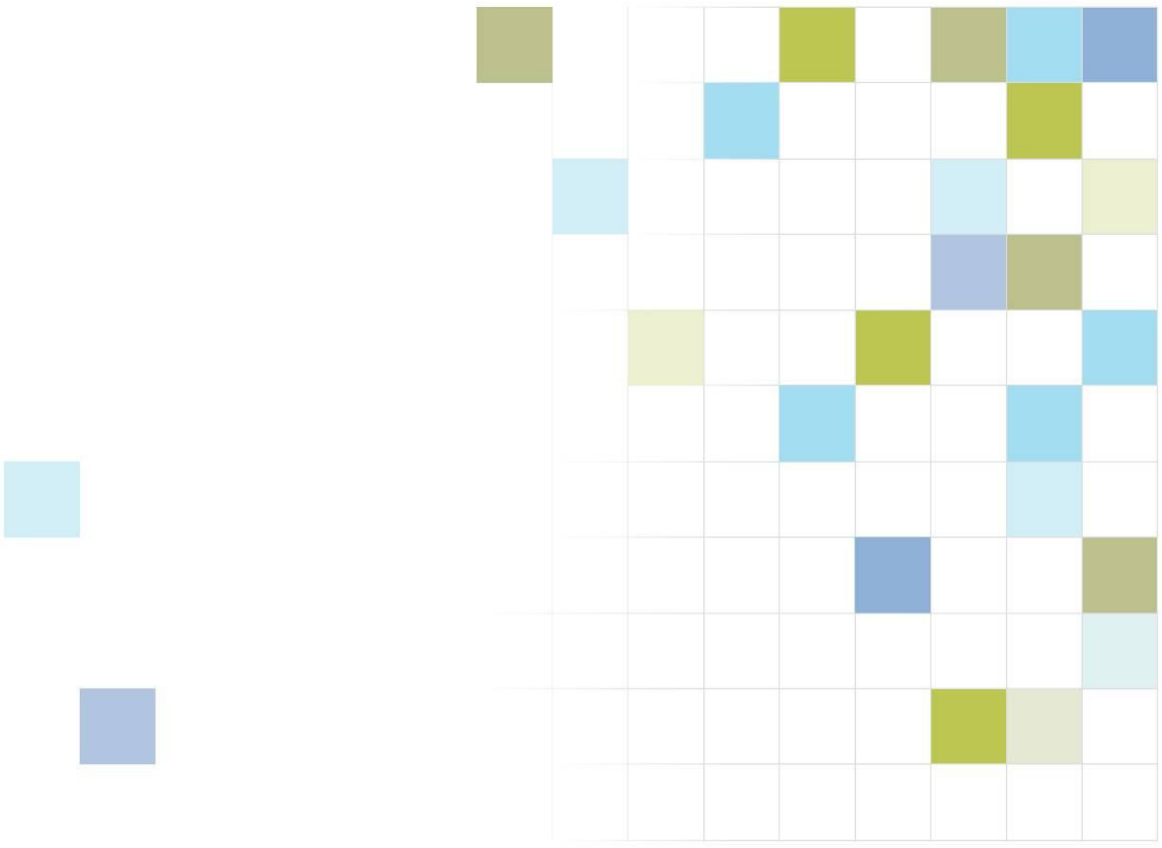

1 Introduction

Four trials were conducted to investigate the effect of oral administered probiotics on the liveweight of weaned lambs when fed on brassica for the first time. Three probiotic mixtures were compared with a water alone control on four commercial farms. These probiotic preparations are designed to introduce live bacteria to the animal gut to speed the adaption to changes in the lamb diet.

The trials were conducted in Gisborne, Taihape, North and South Canterbury on farm grown brassica crops.

2 Site description

The trials were carried out at four commercially operated farms around New Zealand. The various sites for each trial are discussed in greater detail below.

Trial 1 Gisborne

Trial 1 was carried out at the property of of the B5 Maori incorporation at Whangara, 20 km north of Gisborne, on rolling hill country. The lambs had been weaned 6 weeks prior to trial commencement and had grazed improved pasture with no access to brassica forage.

Trial 2 Taihape

This trial was on the property of John Gorden 287 Koeke road, Mataroa, 15 km west of Taihape, on rolling hill country. The lambs had been weaned 6 to 8 weeks before the trial commenced and had only grazed pasture until this time.

Trial 3 Waiau, North Canterbury

The north Canterbury trial was carried out on the property of Bryan Jamison 724 Sherwood road, 8 km north of Waiau on rolling hills. The lambs had been weaned 5 weeks before the trial and had previously grazed a pasture only diet.

Trial 4 Fairlie, South Canterbury

This trial was on the property of Mike Anderson McLeans road, 5 km south of Fairlie on flat cultivated land. The lambs had been weaned for 4.5 weeks and had been grazed on pasture before the trial commenced.

3 Method

3.1 Trial set-up

280 lambs were randomly allocated to four groups (70 lambs in each group). All the lambs on each property were run together as part of a larger farm mob and moved from grazing pasture to grazing the brassica crop on day 1 of the trial.

Lamb breed type was the choice of the various farm owners, but all lambs used in the trial were selected for uniformity and any off-types were removed from the selection, consistency in liveweight (~ 26-32kg), breed, gender and castration status of the lambs were used in each trial to eliminate natural variation in growth rates.

Lambs were eartagged with an individual identification number as well as a colour code to indicate which treatment the animal had been given.

Scientific staff set the trial up initially; administering the various treatments, tagging, weighing and recording animals throughout the trial, providing the probiotic preparations. Facility (Commercial farm) staff carried out the day to day operation of the trial.

3.2 Treatments

The following treatments were administered to one of the four groups as an oral drench.

- Treatment 1: **Control** = Water.
- Treatment 2: **Rumenzyme Cobalt Plus** (4ml).
- Treatment 3: **Live Strains 2**: Rumenzyme Cobalt Plus 2 ml plus Donaghys live probiotic bacteria strains
- Treatment 4: **Live Strains 1**: Rumenzyme Cobalt Plus 2 ml plus AgResearch live probiotic bacteria strains

3.3 Probiotic Treatment Administration

Animals allocated to Treatments 2, 3 and 4 received the various probiotic preparations as an oral drench on day one of the trial before they were introduced to the brassica crop. See treatments for dose rate of various products.
Treatment 1 (Control) was drenched with water at the same volume as treatments 2 to 4.

3.4 Crop management

Facility (Commercial farm) staff carried out the day to day operation of the trial, i.e. break feeding and moving fences in the brassica crop, daily health monitoring, provision of drinking water.
The trial lambs were fed so that they were always gaining weight. Lambs had ad lib access to clean drinking water. The trial lambs were moved from a pasture diet to the brassica crop on day 1.

3.5 Measurements

All trial lambs were weighed on day 1 and then on days approximately 10, 25 and 42 of the trial. The trial in Taihape on John Gordon’s farm had to be stopped prematurely due to a lack of feed caused by drought after the second grazing period.

4 Results

Liveweight gains for each trial site and treatment are shown in table 4.1 below.

Table 4.1: Mean liveweight gain (grams per head per day) for each grazing period, between last and first grazing periods and total liveweight gain (kilograms) for each trial site. LSD is Least Significant Difference. Treatments within a grazing period-site with differing letters are significantly different (P<0.05).

Farm	Treatment	Grazing period 1 (g/h/d)	Grazing period 2 (g/h/d)	Grazing period 3 (g/h/d)	Total LWG (kg)
Brian Jamieson – Nth Canterbury	Live Strains 1	75 b	225 a	365 a	8.85 ab
	Live Strains 2	46 b	247 a	323 b	8.03 bc
	Rumenzyme	143 a	227 a	346 ab	9.53 a
	Control	44 b	251 a	326 ab	7.96 c
	LSD 5%	**39**	**30**	**42**	**0.84**
Mike Anderson – Sth Canterbury	Live Strains 1	51 b	125 a	341 a	6.44 ab
	Live Strains 2	44 b	108 a	353 a	6.19 b
	Rumenzyme	135 a	110 a	379 a	7.23 a
	Control	82 b	107 a	381 a	6.74 ab
	LSD 5%	**52**	**27**	**50**	**0.85**
John Gordon - Taihape	Live Strains 1	225 a	63 b	*	4.06 a
	Live Strains 2	212 a	121 a	*	4.48 a
	Rumenzyme	204 a	89 ab	*	3.93 a
	Control	209 a	85 ab	*	4.09 a
	LSD 5%	**41**	**32**		**0.63**
Whangara B5 - Gisborne	Live Strains 1	-11 a	115 c	250 a	6.59 a
	Live Strains 2	-1 a	162 a	241 ab	7.12 a
	Rumenzyme	10 a	160 ab	231 b	7.02 a
	Control	30 a	125 bc	244 ab	6.52 a
	LSD 5%	**46**	**36**	**19**	**0.72**

Note: in the table above * means no weights were recorded for that grazing period (the Taihape trial was affected by drought conditions and lack of feed after the second grazing period).

Liveweight gains for the combined trial sites for each treatment are shown in table 4.2 below. John Gordon's (Taihape) farm's results have been omitted from the following analysis due to the trial having to be prematurely stopped due to reasons previously discussed

Table 4.2 Mean liveweight gain (grams per head per day) for each grazing period, between last and first grazing periods and total liveweight gain (kilograms) for the combined trial sites (excluding Taihape). LSD is Least Significant Difference. Treatments within a grazing period with differing letters are significantly different (P<0.05).

Treatment	Grazing period 1 (g/h/d)	Grazing period 2 (g/h/d)	Grazing period 3 (g/h/d)	Total LWG (kg)
Live Strains 1	38 ab	155 a	319 a	7.29 a
Live Strains 2	30 b	172 a	306 a	7.11 a
Rumenzyme	96 a	166 a	319 a	7.93 a
Control	52 ab	161 a	317 a	7.08 a
LSD 5%	**56**	**36**	**38**	**0.87**