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Comparing different methods of Cobalt/Vitamin B12 supplementation for improved lamb growth: final results (February 2020).

Three farms in the South East Wales area, of differing geographic locations were selected to take part in a trial with Farming Connect and South Wales Farm Vets (farm locations are seen on the map below). All three farms were known to have a Cobalt deficiency of a varying degree prior to getting involved with the trial. All farms vary in farm type and size; with a variety of breeds, all lambing at different stages of the year.



What was done; the trial (part 1)

- 140 twin lambs (70 pairs of twin lambs) were selected at 20kg (a total of 420 lambs across three farms).
- All lambs received a Selenium and Iodine bolus (Animax Tracesure Selenium/Iodine).
- All lambs were weighed on calibrated scales.
- Blood samples were taken from a sub-population of lambs from each farm (20 out of 140).
- One twin was given the SmartShot™ injection, with the other twin given an Animax Tracesure Cobalt™ bolus.

*** Due to all 3 part-taking farms having a known cobalt deficiency, it was decided that it would be against animal health and welfare standards to include a control group of untreated lambs. This was justified due to the fact that the trial was solely concentrating on comparing the daily-liveweight gains of lambs treated with a bolus versus lambs treated with the SmartShot™ injection.



SmartShot™ vs Cobalt bolus

SmartShot™

- Vitamin B12 Injection.
- Imported from New Zealand.
- Variable recommended dose - 0.5ml for lambs being fattened, 1ml for ewe lamb replacements.
- Varying length of action dependent on dose.
- Can be given from 3 weeks of age.
- Price - £1.33 for 1ml dose, £0.67 for 0.5ml dose.

Animax Tracesure Cobalt™ bolus

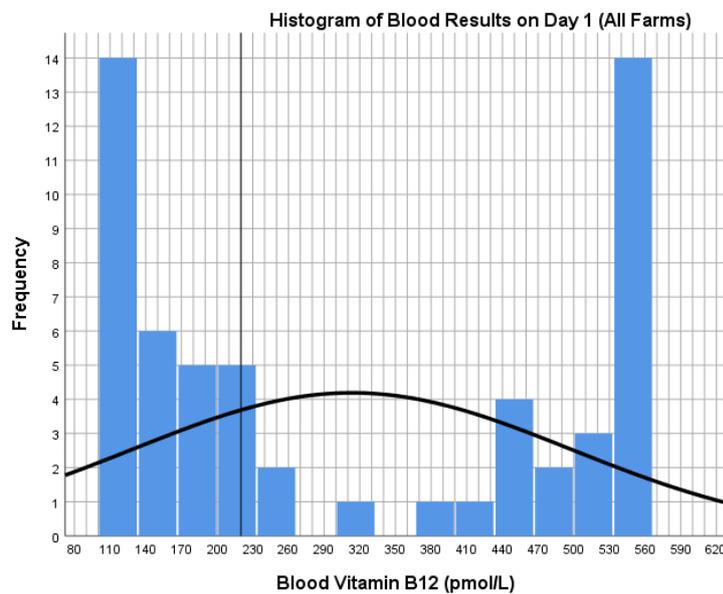
- Slow release cobalt bolus (185mg cobalt).
- Lambs need to be 20kg or greater before they can receive the bolus.
- Routinely available in UK.
- Claims to last up to 6 months.
- Price: £0.55 per head.

Results

The table below shows the breakdown of what was done at the beginning on the trial;

	Result		
Total Lambs	415		
Average (Mean) Weight (Kg)	21.79		
Sex	Female 219	Male 192	Unrecorded 4
Treatment	Bolus 202	Injection 213	

The graph below shows the results of the blood samples (Vitamin B12 levels) of all lambs blood sampled prior to taking part in the trial, and prior to receiving the Cobalt supplementation.



The table below shows the breakdown of blood Vitamin B12 levels of each farms, as well as the percentage of lambs showing Vitamin B12 deficiency on each farm.

Farm	Median (pmol/L)	Min (pmol/L)	Max (pmol/L)	% deficient
All	216	111	550	51.7
1	534	111	550	17
2	120.5	111	550	80
3	216	130	550	55

During the trial

The trial lasted for a total of 3 months. If lambs were sold before the end of the trial, an exit weight and date were recorded. All lambs were managed as they would have been normally.

***Farm 3 experienced a standstill in growth rates around two-third of the way through the trial; this was rectified with an oral Cobalt drench.

The trial (part 2)

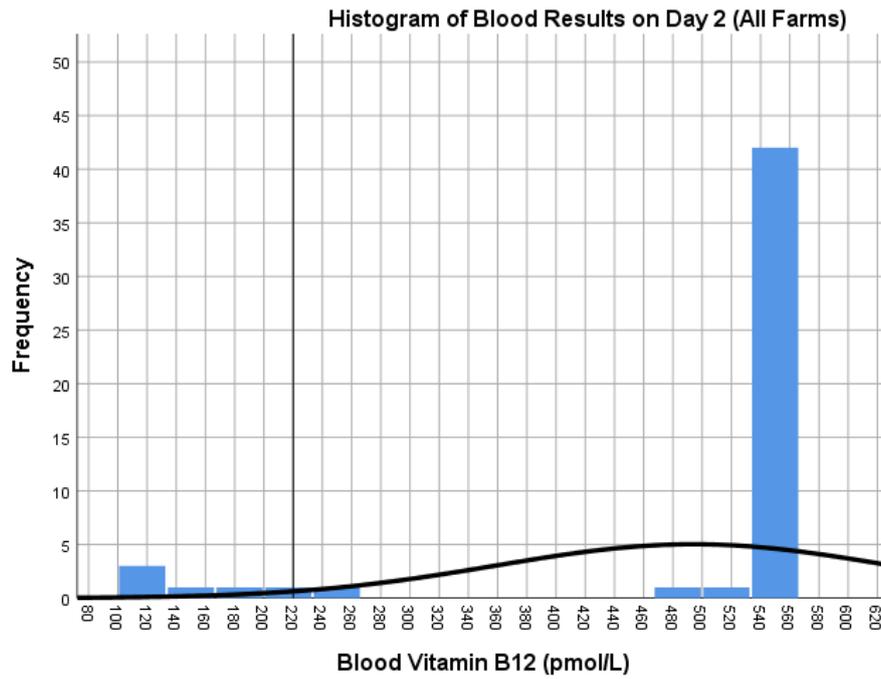
- 3 months later, all lambs present were reweighed with their weights recorded.
- The same lambs as part 1 of the trial were blood sampled again.

Results

The table below shows the differences between the average weight (kg) and DLWG (kg) of the lambs at the start and the end of the trial.

	Start	End
Total Lambs	415	403
Average Weight (kg)	21.79	32.85
Average DLWG (kg)		0.128
Total Lambs Receiving treatment type	Bolus 202 Injection 213	Bolus 196 Injection 207

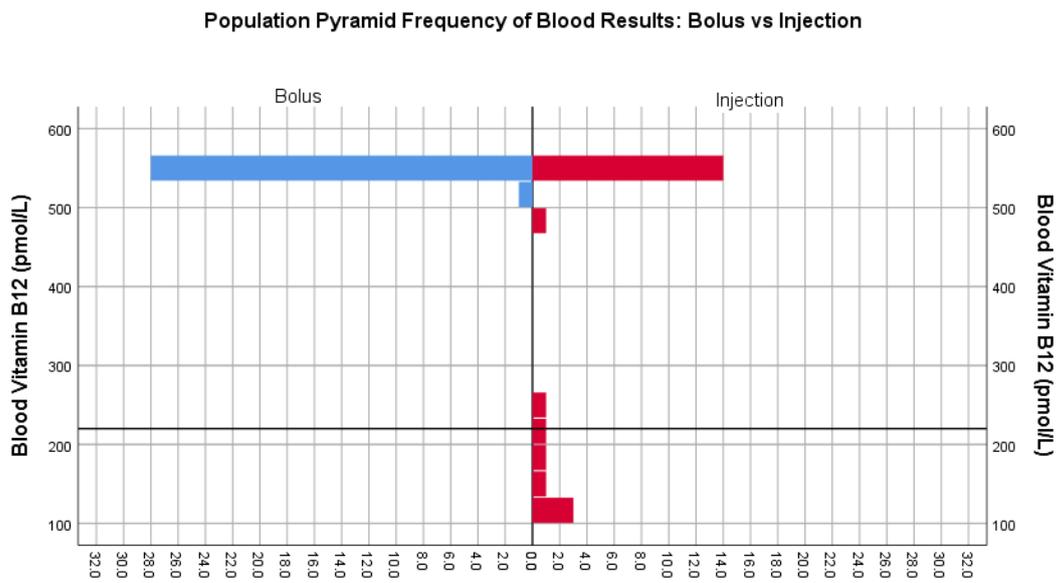
The graph below shows the results of the blood samples (Vitamin B12 levels) of all lambs blood sampled prior at the end of the trial. The blood results show that although Cobalt supplementation was given, some lambs still showed Vitamin B12 deficiency levels.



The table below shows the average, minimum and maximum blood Vitamin B12 levels across all three farms, as well as the percentage of lambs showing Vitamin B12 deficiency on each farm.

Farm	Median (pmol/L)	Min (pmol/L)	Max (pmol/L)	% deficient
All	550	111	550	11.8
1	550	474	550	0
2	525.5	111	550	37.5
3	550	541	550	0
1&2	550	111	550	17.1

The graph below shows how the blood results compare, bolus vs injection.

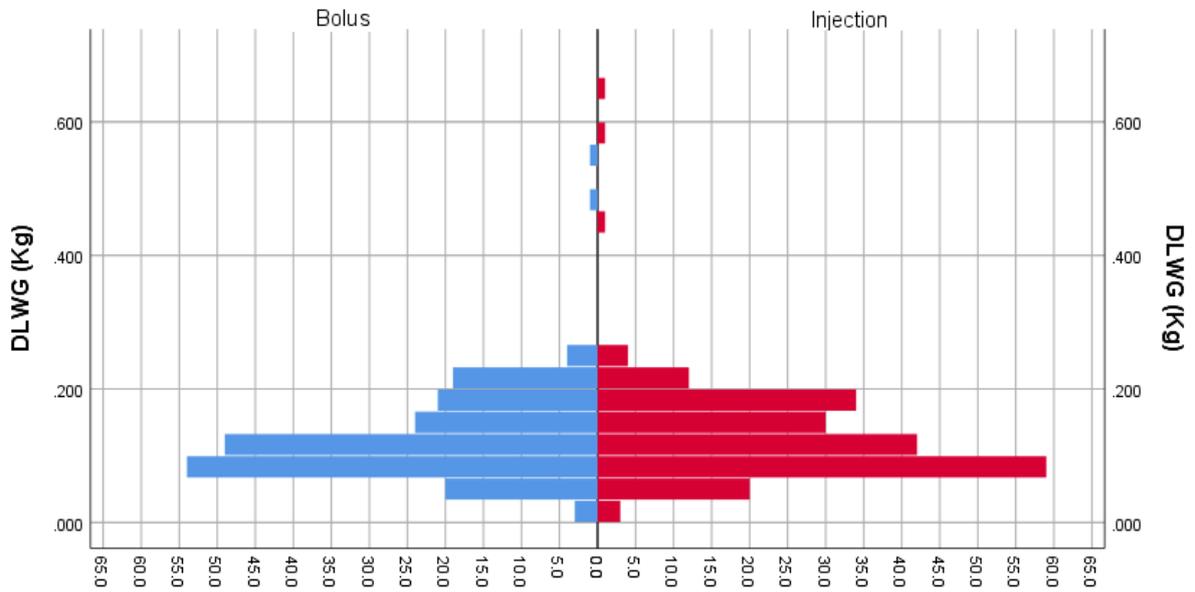


The table below shows which method of supplementation had the greatest effect on the DLWG of lambs on each farm.

Farm	Significant if $p < 0.05$	Which is Better
All	0.05	Bolus
1	0.395	Neither
2	0.000	Bolus
3	0.470	Neither
1&2	0.03	Bolus

The graph below shows the average DLWG achieved by lambs during the course of the trial.

Population Pyramid Frequency DLWG by Bolus/ Injection



The table below shows (when compared against each other and their effect on lambs DLWG) which one has the best effect; the injectable form of Vitamin B12, or the slow-release bolus?

Farm	Average DLWG (kg)		Significant if $p < 0.05$	Which is better
	Injection	Bolus		
All	0.130	0.127	0.666	Neither
1	0.171	0.173	0.770	Neither
2	0.088	0.091	0.665	Neither
3	0.132	0.122	0.520	Neither
1&2	0.129	0.129	0.940	Neither

So, which one should you use on your farm?

- Firstly, confirm deficiency and level.
- If administering to 20kg lambs main factors become management decisions as each will perform equally as well, i.e. price/ease of administration/regularity of handling.
- Monitor how the product performs by weighing lambs regularly.
- The Smartshot™ injection can be given from 3 weeks of age, which will help combat post weaning deficiency. This will be effective without requiring a functioning rumen.

Key outcomes and final results from the trial:

- There was no statistically significant difference between lambs DLWG (injection vs bolus).
- Both products will improve vitamin B12 levels in the blood.
- The efficacy of products is farm dependent and likely related to level of deficiency at start of use.
- Further research is needed.