

# final report

**Project code:** B.PRS.0302 / PIRD.03.Q03

**Prepared by:** Merv Mayes  
Western Downs Beefplan  
Group Inc

**Date published:** December 2005

**ISBN:** 9781741918731

**PUBLISHED BY**  
Meat & Livestock Australia Limited  
Locked Bag 991  
NORTH SYDNEY NSW 2059

## *Optimum HGP Use*

**Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.**

This publication is published by Meat & Livestock Australia Limited ABN 39 081 678 364 (MLA). Care is taken to ensure the accuracy of the information contained in this publication. However MLA cannot accept responsibility for the accuracy or completeness of the information or opinions contained in the publication. You should make your own enquiries before making decisions concerning your interests. Reproduction in whole or in part of this publication is prohibited without prior written consent of MLA.

## **Contents**

Background .....	3
Project Objectives .....	3
Methodology.....	3
Analysis of Data and Discussion .....	7
Conclusions from trial results .....	10
Opportunities for further work.....	11
Discussion of Group Learnings.....	12
Achievement of planned results.....	12
Impact.....	12
How the project could have been improved.....	12
Overall Comments .....	13
Acknowledgements.....	14
APPENDIX 1 .....	15

## Background

Work conducted by Bob Hunter (CSIRO) and others within the Cattle and Beef Quality CRC, and other trials, has reinforced the economic growth benefits resulting from HGP use and proved that repeat use of HGPs does not erode the benefits of one off implants. It has also shown that more regular implantation can further increase the benefits. This PIRD was originally designed to further investigate the commercial application of HGP strategies.

## Project Objectives

- To record the relative responses to different repeat use HGP strategies in commercial enterprises
- To investigate if different HGP strategies might be more beneficial for different production scenarios
- To investigate the options for HGP use in cull cows in the 100 days prior to turn-off
- To commence investigation of the use of different HGP products in steer calves whilst suckling the cow (developed after the original project proposal)

## Methodology

### Overview

Initially, four of the group's businesses committed to participate in comparing various HGP strategies for steers over the 12-13 month (400 day) period prior to turnoff. Results have been submitted by three of those businesses.

The six potential repeat use strategies for steers identified by the group in consultation with DPI extension staff, Bob Hunter (CSIRO) and Elanco were as follows.

- Strategy 1 (Industry control) 1 x 400 day oestrogen based product
- Strategy 2 2 x 200 day oestrogen based product
- Strategy 3 4 x 100 day oestrogen based product
- Strategy 4 2 x 100 day oestrogen based product (wet season)  
1 x 200 d oestrogen based product (dry season)
- Strategy 5 2 x 100 day oestrogen + androgen/progesterone (wet)  
1 x 200 d oestrogen based product (dry season)
- Strategy 6 (True control) No implant

A fifth business committed to implant cull cows approximately 100 days prior to turnoff, making comparisons between nil implant, 100 day Compudose and a 100 day oestrogen + trenbolone acetate product. This study was not undertaken.

A sixth business conducted an additional short term trial, not originally identified in the project proposal. This site compared two products implanted into steer calves at branding, namely Compudose G and Compudose 200.

The details of the products used were as follows.

Product Name	Active Ingredient(s)	Theoretical active life
Compudose 100	Oestradiol	100 days
Compudose 200	Oestradiol	200 days
Compudose 400	Oestradiol	400 days
Compudose G	Oestradiol + trenbolone acetate	100 days
Synovex S/Progro S	Oestradiol + progesterone	100 days
Progro TEH	Oestradiol + trenbolone acetate	100 days

### Longvale site

At 'Longvale', strategies 1, 5 and 6 were implemented utilising 30, 29 and 30 head respectively in an unreplicated trial. Initially these steers were run together, but were split up during the course of the recording period. Initial weights and implants commenced on the 4/11/03. Cattle were weighed every 92-96 days for the first three weigh periods, with a

only a 50 day period up to the cessation of useful data collection. The total recorded period was 333 days. Due to the declining season the manager decided to grain supplement some of the animals in the trial groups. Unfortunately this commenced part way through the third weigh period and the cattle were not weighed until approximately one month after supplementation of some animals commenced. The animals in the strategy 5 group were due for their third and final implant at that weighing. Only 12 of the 29 animals were given their implant. All animals that received grain supplementation were slaughtered on the 20/10/04, but those not supplemented were killed at later dates. All cattle had their final useable weighing on the 2/10/04 (a total of 333 days after trial commencement), approximately three weeks prior to the first slaughter date.

### **Avalon/Booral site**

At the 'Avalon/Booral' site, the initial plan was to run four mobs (replicates), each being approximately a double-decker load which would be sent off to the processor as one lot. A total of 168 steers were originally allocated to three replicates of strategies 2, 5 and 6. The third replicate also included strategy 1. The initial weighing took place on the 3/12/03. However, animals were not allocated to treatments until the 22/12/03. Each group originally contained 10 to 16 head. After the initial weighing, the steers were weighed approximately every 100 days, varying between 68 days and 120 days. Replicates of the same strategies were not always weighed at the same time (ie not within a day of each other). The total period that these cattle were recorded was for 403 to 405 days, depending on the replicate.

A second non-replicated trial was commenced on the 24/01/04 (after some rain). This included strategies 1, 2, 5 and 6, with 9 steers in each strategy. Weigh periods for this trial were generally shorter ranging from 36 to 65 days. The total period that these animals were observed was 351 days.

Due to two major causes, the results of only 145 of the original 168 steers allocated across strategies in the two trials were able to be analysed. Initially, significant difficulties were encountered by the manager in implanting with either Compudose 200 or Compudose 400, resulting in a significant number of implants popping out of the ear. In total, 14 implants were identified as having come out of the ear after implantation. Secondly, this property experienced severe challenge with three-day sickness during the trial period. A number of animals died and several others were severely affected. For these reasons, any animals that lost implants, died during the trial period or were recorded as missing a weighing or being sick, were removed from the data set.

### **Riverglen Site**

At 'Riverglen', strategies 4 and 5 (less the second 100 day implants) were to be implemented. Two groups of approximately 50 head were to be involved – utilising similar numbers of steers and heifers in each treatment. In total, 63 steers and 42 heifers had complete sets of data, at least one contemporary, and could be compared to another implant strategy group that had been managed in exactly the same way. A further 28 steers and 29 heifers appear to have commenced treatments but cannot be used in the analysis because they did not meet one or more of the above requirements, or they lost their identification. The implanted groups all received their first implant (Compudose 200) on the 19/11/03.

Two distinct genotypes of crossbred animals were used within both the steers and heifer groups (with and without Charolais). This obviously had the effect of reducing group size which was further complicated by having two different paddocks that the animals were run in during the first 190 days and having the short finishing phase (54-56 days) split across three feed regimes (two different paddocks of oats and the feedlot). Consequently, group sizes were generally small and inconsistent in size ranging from two to fifteen head. In addition, at the May weighing, 190 days post commencement, almost half of the trial cattle

were held overnight before being weighed, whereas the remainder were weighed the same days as they were mustered. As it was only 43 days after the previous weighing, this resulted in negative weight gains compared to fairly positive weight gains by animals that had not been fasted.

The cattle were to be weighed approximately every 100 days, with the actuals occurring at 147, 43 and 56 days. Where applicable, the second HGP's (Compudose 100, Progro S or Progro TEH) were implanted on the 27/05/04, 190 days after the Compudose 200. Only 54-56 days after these 100 day products (20-22/07/04), the final weights were recorded prior to slaughter. The total recorded period was 244-246 days, depending on the group. Ideally this would have been closer to 300 days.

### Tarossie Site

An additional set of HGP strategies was investigated at 'Tarossie' in a small scale trial which commenced at branding on the 8th of November 2003, ie the calves were still on milk. After initial weighing, stratification on weight and random allocation to treatments, 10 steers were implanted with Compudose G and 10 steers were implanted with Compudose 200. The steers were weighed on the 21 February 2004 after 105 days (close to the theoretical life of Compudose G), then again at weaning on the 20 March 2004 (133 days post implants) and then at 202 days post implant on the 28 May 2004 (close to the theoretical life of Compudose 200). After weaning in March, the steers were transferred to 'Booral' and grown on limited dry pastures.

### Results

Detailed summary tables summarising the results from the Longvale, Avalon/Booral and Riverglenn sites can be found in Appendix 1. However, brief summaries are included below.

### Longvale site

The entire strategy groups are only comparable for the first 188 days. Beyond that point, strategy groups were split into different treatments. Some sub-groups were very small.

	LWG/d 188 days	LWG/d 333 days		
<b>Strategy 1</b> 1 x Compudose 400	0.897 (30)	0.61 (19)	No grain	
			Grain supplement	
<b>Strategy 5</b> 1 x Compudose G, 1 x Compudose 200, 1 x Compudose G	0.915 (29)	0.64 (15)	No Grain No 3 <sup>rd</sup> implant	
			0.82 (2)	Grain supp No 3 <sup>rd</sup> implant
			0.78 (12)	Grain Supp + 3 <sup>rd</sup> implant
<b>Strategy 6</b> Control – no implant	0.780 (30)	0.54 (20)	No grain	
			0.69 (10)	Grain supplement

(Bracketed number) represents the number of animals in each group.

Carcase information should also have been available, however the processor did not fulfil their commitment to record the individual identification on the steers at slaughter.

### Avalon/Booral site

Trial 1 had three replicates of strategies 2, 5 and 6, but strategy 1 was included only in the third replicate. Therefore the third replicate is also represented as a stand alone un-replicated set of data. Trial 2 (started at a later date to the rest), is also an un-replicated set of results across the four strategies and is therefore not directly comparable to any other results.

	<b>Trial 1 (Av reps 1-3) LWG/d 403-5 days</b>	<b>Trial 1 (Rep 3) LWG/d 403-5 days</b>	<b>Trial 2 LWG/d 351 days</b>
<b>Strategy 1</b> 1 x Compudose 400	-	0.457 (8)	0.522 (9)
<b>Strategy 2</b> 2 x Compudose 200	0.491 (12,11,3)	0.481 (3)	0.594 (8)
<b>Strategy 5</b> 1 x Synovex S, 1 x Compudose 200, 1 x Synovex S	0.483 (15,13,11)	0.499 (11)	0.528 (9)
<b>Strategy 6</b> Control – no implants	0.393 (13,14,10)	0.375 (10)	0.443 (9)

(Bracketed number) represents the number of animals in each group.

It was planned for all animals to be slaughtered at the end of the recording period, however poor seasonal conditions and animal performance resulted in a staggered and delayed slaughter up to six months post completion.

### Riverglenn Site

The 63 steers were split across four different groups which are not directly comparable even though the strategies are the same. The 42 heifers are split across three different groups which are also not directly comparable. Consequently the number of animals in each strategy/group combination is small to very small in most cases.

#### Steers

A control group was not included because the benefits of HGPs are well documented and this property has used HGPs for some time. The focus was on comparing different combination strategies.

<b>Treatment</b>	<b>Group 1 LWG/d 246 days</b>	<b>Group 2 LWG/d 245 days</b>	<b>Group 3 LWG/d 244 days</b>	<b>Group 4 LWG/d 244 days</b>
<b>Strategy 4*</b> Comp 200 + Comp 100	1.21 (3)	1.27 (14)	1.25 (5)	0.93 (8)
<b>Strategy 5*</b> Comp 200 + Progro S	1.22 (8)	1.20 (15)	1.23 (4)	0.82 (6)

\* Strategies have only one of the two 100 day implants.

Group 1 – Charolais cross steers finished in the feedlot for 56 days, run in the Cow Paddock for first 190 days.

Group 2 – Charolais cross steers finished on 66 acres oats for 55 days, run in the Creek Paddock for first 190 days.

Group 3 – Crossbred steers finished on 66 acres oats for 54 days, run in the Creek Paddock for first 190 days.

Group 4 - Crossbred steers finished on Back Flat oats for 54 days, run in the Cow Paddock for first 190 days.

**Shaded area** – animals weighed after overnight fasting at May weighing.

(Bracketed number) represents the number of animals in each group.

### Heifers

Heifers are not expected to respond to oestradiol only implants. Unfortunately, there was no control treatment in group 5, and only two animals were controls in group 7.

Treatment	Group 5 LWG/d 244 days	Group 6 LWG/d 244 days	Group 7 LWG/d 246 days
Strategy 4* Comp 200 + Comp 100	0.87 (6)	0.82 (6)	1.01 (5)
Strategy 5* Comp 200 + Progro TEH	0.79 (10)	-	1.08 (4)
Strategy 6* Control – No HGP	-	0.70 (9)	1.01 (2)

\* Strategies have only one of the two 100 day implants.

Group 5 – Hereford/Santa heifers finished on Back Flat oats for 54 days, run in the Cow Paddock for first 190 days.

Group 6 – Charolais cross heifers finished on Back Flat oats for 54 days, run in the Cow Paddock for first 190 days.

Group 7 – Charolais cross heifers finished in the feedlot for 56 days, run in the Cow Paddock for first 190 days.

Shaded area – animals weighed after overnight fasting at May weighing.

(Bracketed number) represents the number of animals in each group.

### Tarossie Site

A control group was not included because the benefits of HGPs are well documented and this property has used HGPs for some time. The focus was on comparing different products during the period that the steer calves were on milk.

	LWG/d Branding – onwards 105 days	LWG/d Pre- weaning 28 days	LWG/d Branding to weaning 133 days	LWG/d Post- weaning 69 days	LWG/d Total period 202 days
Compudose 200 (10)	1.2	1.06	1.17	0.21	0.84
Compudose G (10)	1.26	0.94	1.19	0.31	0.89

(Bracketed number) represents the number of animals in each group.

## Analysis of Data and Discussion

### Longvale site

After 188 days (post commencement), the last date in which all data was completely comparable, the average daily weight gains for strategies 1, 5 and 6 were 0.887, 0.915 and 0.780 respectively. As expected, the two strategies involving HGP's (1 and 5) outperformed the control group without HGPs – by a minimum of 0.117 kg/hd/d (22kg). Without statistical analysis, it is not possible to determine whether the treatment using Compudose G followed by Compudose 200 (strategy 5) is definitely better than the single use of Compudose 400 (strategy 1). The difference of 0.018 kg/hd/d equates to just 3.4 kg over the period. At the point of this weighing, the Compudose 200 in the strategy 5 animals was only about half way through its theoretical life.

Following through to the end of the 333 day period, for the sub-groups of animals that remained comparable, the relative position of the three strategies stayed the same. For the unsupplemented steers (no grain), the weight gains were 0.61, 0.64 and 0.54 for strategies

1, 5 and 6 respectively. The HGP strategies maintained a buffer of at least 0.07 kg/hd/d over the non-HGP treated group, equating to at least 23 kg advantage over the total period. This group of strategy 5 steers (i.e. not grain supplemented) were not re-implanted with Compudose G at the 13/08/04 weighing as intended, and therefore had no active implant for approximately the last 50 days.

The smaller sub-groups which were grain supplemented showed the same trend with HGP treated animals outperforming HGP free animals by at least 0.09 kg/hd/d (30kg over the total period). This emphasises the point that the higher the daily gain, the greater the benefit from a HGP. There would definitely be no significant difference between strategies 1 and 5 (HGP treated strategies) at this point.

Some of the results in individual weigh periods after some steers were put onto grain are difficult to interpret. For example, during the period that some animals were introduced to grain, the control steers without grain outperformed those with grain. Speculation could suggest that those animals with negative gains during this period suffered from grain poisoning or perhaps 3-day sickness. Alternatively, the relative results for all strategies and sub-groupings for the last 50 days are very typical of what would be expected. Because of the issues with experimental design, small numbers of animals in the sub-sets and the potential that transcription errors occurred, it would be dangerous to draw conclusions outside the discussion in the paragraphs above.

#### **Avalon/Booral site**

Unfortunately, because cattle across reps were not always implanted and/or weighed at the same time (i.e. within a 1-2 day period) and therefore at the same intervals, comparisons between reps has limited validity. For example, for strategy 5 the differences between reps is 17 days i.e. in one rep, cattle had one implant for 17 days longer and the implant for next for 17 days less. However, despite these imperfections, the following attempts to pull out some findings.

In trial 1, where strategies 2, 5 and 6 were replicated, only the averages for the entire 403 to 405 day period could be compared. As expected, both of the HGP strategies (2 and 5) had a large benefit over non HGP implanted animals (0.483 vs 0.393 kg/hd/d for strategy 5 vs strategy 6) i.e. at least 0.09 kg/hd/d or 36 kg over the entire period. Without statistical analysis it is unclear as to whether the apparent advantage of strategy 2 over strategy 5 (0.491 vs 0.483 kg/hd/d) is significant. This trend is if anything in the reverse order to what may have been expected. In one of the three reps, strategies 2 and 5 were the same, in one strategy 2 was higher than strategy 5 and in the other strategy 5 was higher than strategy 2.

In rep 3 of trial 1, where strategies 1, 2, 5 and 6 were compared, again all HGP strategies performed well above the control/non-HGP group i.e. a minimum benefit of 0.082 kg/hd/d (0.457 vs 0.375 kg/hd/d) or 33 kg over the total period. In this case, the relative results were consistent with expectations that more aggressive strategies would achieve higher performance – 0.457, 0.481, 0.499 and 0.375 kg/hd/d for strategies 1, 2, 5 and 6 (1 x 400 day Compudose; 2 x 200 day Compudose; 1 x Synovex + 1 x 200 day Compudose + 1 x Synovex; and nil implants respectively). Again, it is not clear whether the differences between HGP strategies would be statistical.

In Trial 2 which was conducted over 351 days, unreplicated and involved 9 animals in each of the four strategies (1, 2, 5 and 6), the results showed a similar benefit of HGPs over non-HGPs, but different relativities between HGP strategies. The weight gains were 0.522, 0.594, 0.528 and 0.443 kg/hd/d for strategies 1, 2, 5 and 6 respectively. The 2 x 200 day Compudose treatment clearly outperformed the others in this case.



Whilst it is dangerous to interpret the results from the Avalon/Booral site too much for specific weigh periods (when weigh periods are not strictly comparable in all cases), there is a trend for HGP treated animals to lose more weight than non HGP animals when in a weight loss situation. However, for the overall results to come out as they do, the implanted animals clearly outperform the non-implanted animals when they are gaining weight. This supports HGP company recommendations that animals will need to be on a plane of nutrition capable of achieving at least a small positive weight gain (eg 0.1 kg/hd/d). This is also supported by nutritional principles that show clearly that it is very inefficient to let mature (finishing) animals lose weight, i.e. it is much more efficient to maintain weight than it is to put weight back on after it is lost.

The managers of this herd also felt from observation that some of the HGP implanted cattle changed their temperament after rain– becoming “bulls” – chasing each other and people. They will consider this if they conduct future trials.

### **Riverglen site**

#### *Steers*

In three of the four steer groups, it would appear that the treatment using Compudose 200 plus the straight Oestradiol product (Compudose 100) outperformed the Compudose 200 + the product with two female hormones (Progro S). The average weight gains over the full trial period being 1.21 vs 1.22 kg/hd/d, 1.27 vs 1.20 kg/hd/d, 1.25 vs 1.23 kg/hd/d and 0.93 vs 0.83 respectively for groups one to four. It may have been assumed that the combination product may have produced a higher level performance. However, considering that the contemporary groups are generally very small, there may be no statistical differences between the treatments. In the one group finished in the feedlot (group 1), the treatments were effectively exactly the same. Interestingly, this group did not perform better than oats finished steers. Group 4, which is the group fasted overnight before their 190 day weighing, did not perform as well as the other groups. Group 2 reflected an overall benefit from the Compudose 200 + Compudose 100 strategy over the Compudose 200 + Progro S strategy (1.27 vs 1.20 kg/hd/d), however for the 55 day period pre-slaughter when the second HGP was active, the reverse result applied (2.30 vs 2.33 kg/hd/d).

#### *Heifers*

From the three groups, there is no consistency of results. In group six where one of the two HGP strategies (Compudose 200 + Compudose 100) was compared to a group of controls, there was a clear benefit of the treated group over the untreated group after the first 190 days (0.70 vs 0.55 kg/hd/d), over the last 54 days (1.24 vs 1.22 kg/hd/d) and over the full 244 days (0.82 vs 0.70 kg/hd/d). However this was not the case in group 7 where the controls and the Compudose 200 + Compudose 100 strategy performed exactly the same (1.01 vs 1.01 kg/hd/d) over the 246 day period. The Compudose 200 + Progro TEH (a male + female hormone product) strategy outperformed these two during the last 56 days to average 1.08 kg/hd/d over the full period. Previous studies suggest that implantation of females with oestradiol only HGPs will not perform any better than non-implanted females. Again the small numbers involved in these groups, particularly only having two control animals in group 7, may well account for these anomalies.

Male/female combined products would be expected to perform better than non-implanted or female only hormone implanted heifers as was the case in group 7. However, in group five where these two strategies were compared (with no control), the combined product performed less well.

In the case of both the steer and heifer results, small and variable group sizes detract significantly from providing clear trends. Similarly, given that the trial was terminated (for animal slaughter) little more than half way through life of the final implants, it is difficult to have any confidence as to whether the results over that period are a true reflection of what

may have occurred over the full period. In summary, no conclusion could be drawn from the heifer results, however the steer results would 'suggest' that there is no advantage of using a product with two female hormones (in this case Progro S) over a straight Oestradiol (single female hormone) product.

#### **Tarossie site**

The largest limitation with this data set is the low number of animals in each group and therefore having the confidence to draw accurate conclusions. However, allocation to treatments and recording of results was very accurate.

The chosen treatments were identified to investigate claims that oestradiol only products would provide the best and a residual response (compared to trenbolone acetate + oestradiol products), when implanted in male castrate calves at branding. These treatments also provided the opportunity to investigate whether a shorter term product (100 days could continue to compete with a longer term product (200 days) up to 200 days post implant.

For the first 105 days, all of which was on milk, steers implanted with Compudose G outperformed those with Compudose 200 (1.26 vs 1.2 kg/hd/d or about 6 kg heavier). During the period from this February weighing to weaning in March (only 28 days), seasonal conditions and growth rates were declining. However for this period the Compudose 200 group did grow faster, but did not bypass the Compudose G group when compared over the full 133 days on milk ( 1.19 vs 1.17 kg/hd/d or 3 kg advantage to the Compudose G group). This erosion of benefit would probably be expected as the Compudose G product was now theoretically outside its active working life. However, this trend was not maintained. After 202 days post-implant, (the last 69 days on dry grass), the average daily gains were 0.89 vs 0.84 kg/hd/d or 10 kg advantage to the Compudose G group.

#### **Conclusions from trial results**

The results from these on-farm trials have conclusively supported the research findings which show a clear economic return through increased liveweight gains and reduced age of turn off, by using HGP's in steers. Conservatively, at \$2.00/kg, the benefit over non-implanted animals is \$40-80/hd over a 400 day period. These results also conclusively identify the potential to strategically combine more than one implant during the 12-13 month period leading up to slaughter.

Whilst these and other trial results show economic benefits in using combinations of implants rather than the industry norm of 1 x Compudose 400, a number of factors need to be taken into consideration. The foremost of these is the extra labour cost (primarily in mustering) to use multiple implants over a 12 – 13 month period. However, in more intensively managed systems as are many southern and central Queensland beef herds, where mustering to monitor weight gain performance every 3-6 months is the norm, more regular implantation offers very real opportunities to increase profits.

In steers, the work conducted in this PIRD did not suggest any benefit in using HGP products with a combination of more than one female hormone (oestradiol + progesterone ie Synovex S or Progro S) over straight oestradiol product (Compudose 100).

Results from these trials also reinforce the notion that there is benefit in having HGP's in the animal's system all of the time (once a program is commenced), even during the dry season when it is perceived that there will be no benefit. In practice, where a HGP strategy utilising more than just one Compudose 400 per year is utilised, it would be useful to implant animals with Compudose 200 at the start of the 6 month period that on average will be driest. This means that at any time that there may be unseasonal better quality feed, the animals will have the opportunity to benefit from having a HGP.

Because the work was not conducted, no conclusions could be drawn on the value of different HGP products for the purpose of finishing cull cows (cows will not respond to oestradiol only products, because of the high oestrogen levels they have inherently). Similarly, graziers who utilise repeat implantation strategies in their steers, face challenges with their heifers, given that there are no suitable products which last more than 100 days for females. The work conducted in this PIRD did not contribute to knowledge on this subject.

This work has also reinforced the need for regular monitoring and projection of pasture supply and quality, and cattle performance, and appropriate action to help keep stock on target for their planned market destinations. Part of this management process will require economic analysis of management options to determine the preferred path (particularly under extreme dry conditions which severely effect pasture growth, quality and subsequent animal performance). Large animals approaching turn off weights should not lose weight and should either be re-directed into an alternate market or performance fed to enable quicker turnoff. This in turn provides the opportunity to achieve superior performance by younger/smaller, more efficient animals. If targets and options for achieving them are better understood and planned, the implementation of best bet HGP strategies for a particular enterprise is likely to be more effective.

It is also clear that in order for the implementation of effective HGP strategies to take place, stock handling facilities, particularly the head bail/crush, must be of a high standard. Good stockmanship skills are also paramount. Collectively these will result in calmer animals, less stress/potential injury to livestock and handlers alike, and better performance. This may also help to manage potential temperament changes occurring in the cattle due to implantation with HGPs.

A lot of the results reinforce the principles developed by Bob Hunter and others from the wide range of experimental work that has been done on HGPs. These include:

- Once you start – don't stop. Sustained responses to repeat implantation of HGPs are achieved.
- The higher the daily weight gain, the higher the response.
- More aggressive implantation strategies (ie more regular application of shorter term implants vs one long term implant) results in a larger response.
- More aggressive implants such as those containing trenbolone acetate should only be used in cattle on a high plane of nutrition eg very good grass, forage crop or grain.

## **Opportunities for further work**

- More controlled comparisons of using 2 x 200 day implants vs combinations of 1 x 200 day (during the drier season) + 2 x 100 day implants (during the wetter season).
- More extensive studies involving the comparison of different types and durations of HGP products for steers still suckling.
- Investigation of the potential responses of the different types of products (ie oestradiol + products) for the purpose of increasing the weight gain of cull cows in the finishing period prior to marketing (eg the last 100 days).
- Consideration and further investigation of HGP products that are best suited to finishing heifers for slaughter under different nutritional regimes (eg grass vs grain finishing), and potential repeat implant strategies (given there are no suitable products which are active for more than 100 days).

## **Discussion of Group Learnings**

### **Achievement of planned results**

- In total, the results achieved were less extensive than the project originally planned, primarily because some of the initial co-operators did not participate and secondly because of problems with the set-up and conduct of the on-farm activities.
- Secondly, those who did participate may not have achieved some of the specific outcomes (conclusive results) that were expected, however those expectations may have been excessive given the nature of the trials.
- Poorly resourced producers operating in a highly variable environment can not be expected to undertake trials with the rigor required to provide comparable and conclusive results. Their primary responsibility is to run their enterprise in its entirety, despite the challenges faced. The funds available from a PIRD are insufficient to support the professional assistance required to conduct research or development activities that will have useful results.

### **Impact**

The cooperators involved have continued to use HGP strategies.

### **Trial Measurements**

The measurements taken show clear and economic benefit due to the implementation of HGP strategies. The choice of strategy will be determined by the regularity of routine management operations eg weighing, feed available, target markets and time frames, and the characteristics of the cattle eg degree of leanness. Steers could be expected to return at least \$40/hd extra per year and be turned off 1 to 2 months earlier (if currently meeting target turnoff weight specifications in the absence of HGPs). The data recorded needs to be stored electronically in a planned, readily analysed format.

### **Environmental Benefits**

Environmental benefits result primarily from the ability to turn market animals off earlier, therefore reducing grazing pressure and leaving higher levels of ground cover and improved pasture condition.

### **Satisfaction with results**

Those co-operators who did at least attempt to fulfil their commitments were disappointed by others who did not. Because of poor data quality in some cases, conclusive results were not able to be drawn – particularly in terms of which specific strategies were likely to be superior. Co-operators did however learn a great deal about what is required in order to conduct useful on-farm research.

### **How the project could have been improved – what the group learnt**

NB These are the collective learnings of the group i.e. each point does not apply to every participating individual/co-operator.

- The importance of planning ahead (eg nutritional strategies), having an ongoing monitoring program to check back against the plan, and having contingency plans in place to address/manage shortfalls as soon as they are predicted/identified.
- The importance of setting up larger treatment groups that are similar eg number, weight, breed mix etc.
- The need to treat groups exactly the same throughout the entire trial period including:
  - keeping all animals together that have started in a group,
  - not treating sub-sets of groups differently,

- weighing all reps of treatments at the same time (i.e. within a day or two), and using standard amounts of curfew.
- The need to minimise the opportunity for transcription errors.
- The need for improved data collection, record keeping and data analysis systems.
- The need to attempt to keep to the original plan as closely as possible.
- Seeking advice (early) when difficulties are experienced and management decisions have to be made which will potentially affect the value of the results.
- Communicating better and not withdrawing from contact with others, particularly when times are tough.
- Being less ambitious and doing fewer things better (when funds for professional support are limited) eg less treatments/strategies compared.

### **Field Days etc**

An invitation only field day was conducted at 'Avalon' in May 2004. A total of 17 producers were present plus the local Elanco representative James Leigo and Beef Cattle Extension Officer Kay Taylor. Producers in the group had the opportunity to share their experience with using HGP's and to identify issues of interest/concern. These were in turn discussed. One such issue involved the different types of implants and the choice of implant and potential outcomes relative to the age of the animal, nutritional conditions, carcass maturity, target markets etc. Other issues covered potential combination strategies, different application guns, application technique, costs, potential problems and how to avoid them. A practical demonstration of HGP application and hands on opportunity was also included.

Outcomes from the day included a clearer understanding of:

- the need to match the implant to the target market, nutritional conditions and carcass maturity of the animal; and
- the need to have good handling facilities and good stockmanship skills.

### **Overall Comments**

The group has probably been fairly burnt by the whole PIRD process. In some cases, seasonal conditions, personal issues and other extenuating circumstances have been largely responsible for some of the difficulties experienced or failings that have occurred.

The duration and severity of drought conditions has meant commitments to timing, action and method were deemed on occasion to be contrary to animal, environmental and financial welfare.

For this and similar projects, having a suitably skilled person with funding and time to oversee the PIRD would have been morale-boosting for co-operators as well as helping keep focus on what amendments to procedures could occur without compromising outputs and results. The absence of funding for such a suitably skilled person has been a major drawback..

Any negative feeling is likely to impair interest in running future projects under PIRD and to make positive recommendation to other parties unlikely – unless significant funds were available. The group feels that in order for producers to conduct Producer Initiated Research and Development at a standard which is likely to provide useable results, funding must be made available at an appropriate level. Otherwise the risk is posed that the limited value of subsequent results represents a very poor return on investment for both MLA via direct funding, and the producers and others who provide a very significant in-kind contribution.

## **Acknowledgements**

The group would like to acknowledge:

- the generous support of Elanco through the provision of product and support via James Leigo throughout the trial, and Tony Kellerman in the set-up phase;
- the MLA PIRD funding and patience of Gerald Martin;
- Bob Hunter, CSIRO for initial comment on proposed strategies;
- Kay Taylor - for collating and analysing the raw data and drafting this report.

## APPENDIX 1

### LONGVALE HGP TRIAL 2003-2005 Summary of Results

	Av wt gain 4/11/03-4/2/04 92 days	Av wt gain 4/2/04- 10/5/04 96 days	Av wt gain 4/11/03- 10/5/04 188 days	Av wt gain 10/5/04- 13/8/04 95 days	Av wt gain 13/8/04- 2/10/04 50 days	Av wt gain 4/11/03- 2/10/04 333 days	Sub-groups split for grain supp. On 14/07/04	No. Hd
<b>Strategy 1</b> (Comp 400)	0.73	1.05	0.897	0.02	0.74	0.61	No grain	19
				0.07	1.69	0.80	Grain Supp	11
<b>Strategy 5</b> (Comp G, Comp 200, Comp G)	0.79	1.03	0.915	0.08	0.72	0.64	No Grain No 3rd implant	15
				0.13	0.98	0.82	Grain Supp No 3rd implant	2
				0.13	1.47	0.78	Grain Supp + 3rd implant	12
<b>Strategy 6</b> (Control)	0.63	0.92	0.780	0.10	0.54	0.54	No grain	20
				0.03	1.41	0.69	Grain Supp	10

Cattle put on grain feeders on the 14/07/04, re-implanted on 13/08/04 and killed on the 20/10/04

Cattle put on grain feeders on the 14/07/04, not re-implanted on 13/08/04 and killed on the 20/10/04

**SUMMARY - AVALON/BOORAL HGP RESULTS December '03 to February '05**

Strategy	Weigh Period	Rep 1 (T1) kg/hd/d	Rep 1 (T1) No. days	Rep. 2 (T1) kg/hd/d	Rep. 2 (T1) No. days	Rep. 3 (T1) kg/hd/d	Rep. 3 (T1) No. days	Reps (Trial 1) Average kg/hd/d	1-3 Reps 1- 3 Total days	Trial 2 kg/hd/d	Trial 2 No. days
<b>Strategy 1</b>	1					0.823	120			1.541	65
400 d Compudose	2					0.435	98			0.88	36
	3					-0.135	124			0.01	65
	4					0.977	61			-0.14	57
	5									-0.186	64
	6									1.104	64
	Total					0.457	403			0.522	351
<b>Strategy 2</b>	1	0.807	120	0.777	120	0.756	120			1.69	65
200 d Compudose	2	0.214	100	0.2	100	0.483	100			0.819	36
200 d Compudose	3	-0.14	117	-0.222	100	-0.287	100			0.025	65
	4	1.485	68	1.274	85	0.996	85			-0.064	57
	5									-0.086	64
	6									1.197	64
	Total	0.501	405	0.492	405	0.481	405	0.491	405	0.594	351
<b>Strategy 5</b>	1	0.76	120	0.628	120	0.881	120			1.541	65
100 d Synovex	2	0.292	101	0.269	101	0.451	100			0.809	36
200 d Compudose	3	-0.303	116	-0.271	99	-0.278	100			0.092	65
100 d Synovex	4	1.767	66	1.267	83	0.94	83			-0.162	57



	5									-0.436	64
	6									1.363	64
	Total	0.502	403	0.449	403	0.499	403	0.483	403	0.528	351
<b>Strategy 6</b>	1	0.579	120	0.64	120	0.63	120			1.306	65
Control	2	0.237	101	0.303	101	0.38	101			0.864	36
No implants	3	-0.174	116	-0.078	116	-0.175	116			-0.164	65
	4	1.292	68	0.976	68	0.857	68			-0.101	57
	5									0.019	64
	6									0.854	64
	Total	0.398	405	0.407	405	0.375	405	0.393	405	0.443	351

**SUMMARY – RIVERGLEN HGP RESULTS**

**Group 1 - Charolais cross steers finished in Feedlot  
(from cow pdk)**

Treatment	Number Animals	Av wt gain 147 days	Av wt gain 43 days	Av wt gain 190 days	Av wt gain 56 days	Av wt gain 246 days
Comp 200 + Comp 100	3	0.93	1.36	1.02	1.83	1.21
Comp 200 + Progro S	8	1.00	1.42	1.10	1.65	1.22

**Group 2 - Charolais cross steers finished  
on 66 acres Oats (from Creek pdk)**

Treatment	Number Animals	Av wt gain 147 days	Av wt gain 43 days	Av wt gain 190 days	Av wt gain 55 days	Av wt gain 245 days
Comp 200 + Comp 100	14	1.04	0.71	0.97	2.30	1.27
Comp 200 + Progro S	15	0.99	0.49	0.87	2.33	1.20

**Group 3 - Crossbred steers - finished on  
66 acres oats (from Creek Pdk)**

Treatment	Number Animals	Av wt gain 147 days	Av wt gain 43 days	Av wt gain 190 days	Av wt gain 54 days	Av wt gain 244 days
Comp 200 + Comp 100	5	1.03	0.57	0.92	2.39	1.25
Comp 200 + Progro S	4	1.13	0.41	0.97	2.16	1.23

**Group 4 - Crossbred steers - finished on  
B/flat Oats (from Cow Pdk)**

Treatment	Number Animals	Av wt gain 147 days	Av wt gain 43 days	Av wt gain 190 days	Av wt gain 54 days	Av wt gain 244 days
Comp 200 + Comp 100	8	0.96	-0.34	0.67	1.87	0.93
Comp 200 + Progro S	6	0.91	-0.28	0.64	1.43	0.82

**Group 5 - Hereford/Santa Heifers finished  
on Back Flat oats (from Cow Pdk)**

Treatment	Number Animals	Av wt gain 147 days	Av wt gain 43 days	Av wt gain 190 days	Av wt gain 54 days	Av wt gain 244 days
Comp 200 + Comp 100	6	1.00	-0.40	0.68	1.51	0.87
Comp 200 + ProgroTEH	10	0.93	-0.41	0.62	1.35	0.79

**Group 6 - Charolais Cross Heifers finished  
on Back Flat Oats (from Cow Pdk)**

Treatment	Number Animals	Av wt gain 147 days	Av wt gain 43 days	Av wt gain 190 days	Av wt gain 54 days	Av wt gain 244 days
Comp 200 + Comp 100	6	0.99	-0.26	0.70	1.24	0.82
Control No HGP	9	0.83	-0.40	0.55	1.22	0.70

**Group 7 - Charolais Cross Heifers finished  
in Feedlot (from Cow Pdk)**

Treatment	Number Animals	Av wt gain 147 days	Av wt gain 43 days	Av wt gain 190 days	Av wt gain 56 days	Av wt gain 246 days
Comp 200 + Comp 100	5	0.89	1.02	0.92	1.29	1.01
Comp 200 + ProgroTEH	4	0.85	0.95	0.88	1.76	1.08
Control No HGP	2	0.95	0.67	0.89	1.43	1.01