MLA PDS Demonstration of an in-paddock cattle weighing system

Hosts: Kojaneerup South and West Kendenup – Bradshaw and Slade Family

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KEY MESSAGES:

- So far all site hosts have reduced the time, or labour, typically spent on cattle weighing activities.
- All of the site hosts were able to identify more timely variations in animal weight gains.
- One of the site hosts used the Optiweigh data to make a more informed sale without the need to bring cattle into the yards for weighing.

Background

In 2023, SCF began a 3-year project investigating an in-paddock weighing system, Optiweigh. The aim of this MLA funded Producer Demonstration Site (PDS) is to utilise an Optiweigh unit on properties in Southern WA to demonstrate the value of an in-paddock cattle weighing system for improved labour efficiency, monitoring animal weights and optimising compliance with target market weight specifications.

Monitoring of cattle live weights to assess welfare and progress them toward target market specifications can be a labour and time intensive operation, particularly if cattle need to be bought into yards regularly for weighing. As a result, cattle producers growing out cattle in extensive paddock environments are not regularly weighing their animals and can therefore be delayed in noticing any changes in growth rates and body condition.

Optiweigh, a product developed in 2019, is a robust, portable, in-paddock cattle weighing system. It weighs the front feet of an animal when it voluntarily enters the unit in the paddock. An attractant such as a lick block, molasses or loose lick is used to entice the cattle to enter any time of the day. A tag reader scans the animals' RFID tag, load bars under the platform collect the animal's front feet weight, and this data is sent to the cloud, with an algorithm applied to calculate total body weight. This data is then available for viewing on the Optiweigh app on a phone, tablet, or laptop, as well as more detailed information via the Optiweigh website. Data is collected at multiple points in the day and requires no animal training or handling to collect. SCF purchased an Optiweigh machine in early 2023 to investigate the benefits that an in-paddock weighing system can offer. The first year's data is presented below.

Methodology

Six host farmers will demonstrate the use of the Optiweigh machine on a minimum of one herd each across the three years of the project. Herd choice is at the discretion of the host farmer. Participating producers have various classes and breeds of animals, including weaners, trade cattle, cows with calves at foot, yearling bulls, and replacement heifers, and it is hoped the benefits of the Optiweigh can be quantified across a range of these different herds.

Cattle liveweight data will be gathered from the Optiweigh system and a cost benefit analysis (CBA) will be performed

for each site. To produce the CBA a pre-project survey will be conducted with producers to determine a range of costs and potential benefits linked to the implementation of in paddock weighing. A post-project survey will then be conducted to enable producers to precisely quantify the different costs and benefits they encountered while utilising the Optiweigh machine. Subsequently, the data gathered from producers will be subject to an analysis using a detailed cost-benefit assessment tool.

Results and Discussion

Bradshaw Family

The Bradshaw's were the first host farmers to use the Optiweigh. They run approximately 160 breeders in a self-replacing operation. They were also able to make a sale of steers based on the Optiweigh data without having to yard them for weighing.

The Bradshaw's trialled the Optiweigh across 3 different classes of stock within their farm:

- 75 steers – 70 ha paddock – 14 days and a second period of 22 days
- 71 heifers - 50ha paddock – 30 days
- 21 cows & 21 calves – 50ha paddock – 15 days

There was an overall trend of weight gain for the first herd of steers between 17 and 30 April, 2023 (Figure 1). During the initial week it appears that the steers needed an acclimatisation period of approximately one week before throughput in the Optiweigh increased. This was potentially due to the steers needing to learn where the attractant was, and paddock placement of the Optiweigh. It was observed that once it was moved closer to a water point throughput increased. In addition, the individual EID measurements highlight the variability within the herd (Figure 1).

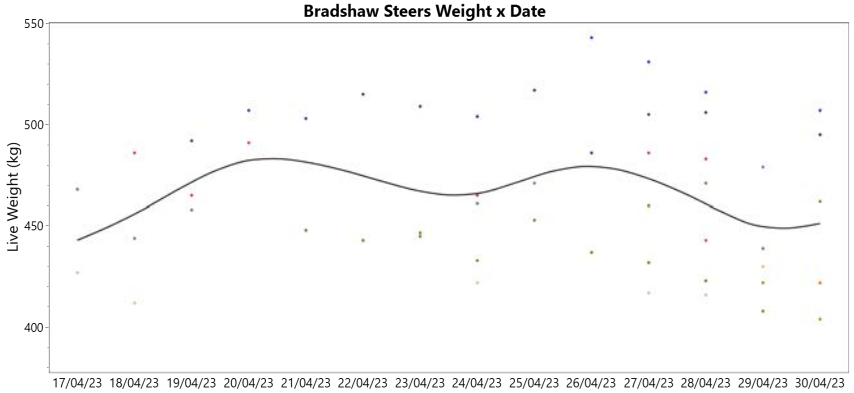

Figure 1: Optiweigh data from the 75 steers between 17 and 30 April 2023, Bradshaw Family, South Stirling, WA.

Daily individual throughput the second time around for this herd was much higher. This was put down to the Optiweigh location, the fact that the steers had already been exposed to the Optiweigh and the type of attractant (lick) used. There were still similar levels of variability in the weights recorded (Figure 2).

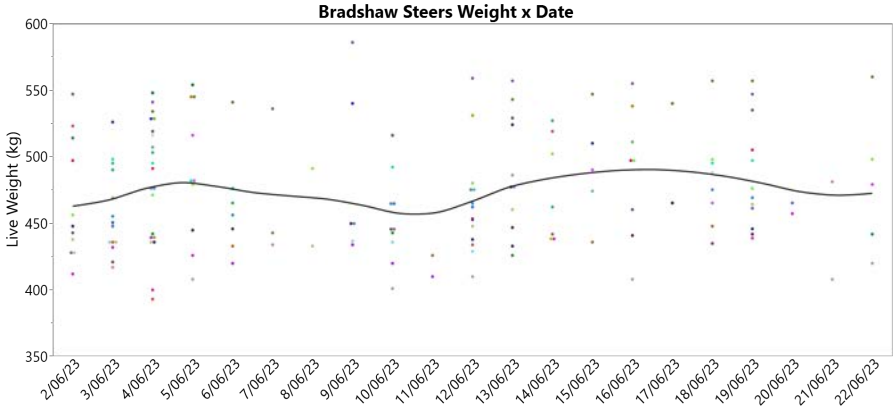

Figure 2: Optiweigh data from the 75 steers between 2 and 22 June 2023, Bradshaw Family, South Stirling, WA.

Between the two sessions with the steers, the Bradshaw's placed the Optiweigh in with a herd of heifers from the 1 May until the 2 June 2023. A significant weight gain trend was observed in the heifer herd over the month the Optiweigh was in use (Figure 3). This data set was bolstered by the high frequency of readings, and likely represents the most accurate data recorded on the Bradshaw property.

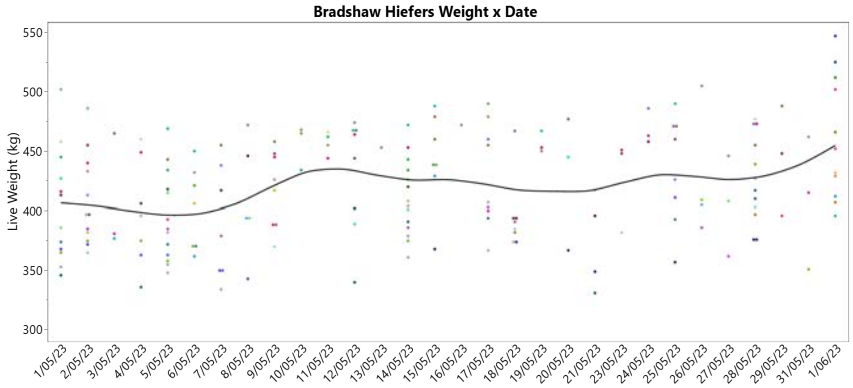

Figure 3: Optiweigh data from the 71 heifers between 1 May and 2 June 2023, Bradshaw Family, South Stirling, WA.

An economic analysis was performed to demonstrate the dollar benefit of the in-paddock weighing system. The Optiweigh was found to be a neutral investment for Bradshaw's with most of the benefit derived from reduced labour costs (Table 1). Assuming the Optiweigh has a life of 15 years, it was determined that it would take ~10 years to pay off in this system.

Table 1: Summary of the key performance indicators for the Bradshaws family's operation.

Benefit/KPI	Value ($/yr)	Value ($/hd)
Reduced labour due to not needing to weigh cattle when yarding for other husbandry activities.	$4,885	$10.5
Reduced time off feed due to not needing to weigh cattle when yarding for other husbandry activities.	$70	$0.17
Improved nutrition management.	$1,156	$2.5

Slade Family

The Slade family run a total of 1490 cattle including 550 breeders. While using the Optiweigh, the Slade's used it to monitor the weight gain of finisher steers from 27 July 2023 to the 14 September 2023.

Over this period, there was an average herd weight gain of 72kg, from 415kg at the beginning of the period, peaking at 487kg on the 8 September (Figure 4). This was prior to the heavy steers being drafted off shortly before the Optiweigh was taken out of the paddock and the demonstration ceased.

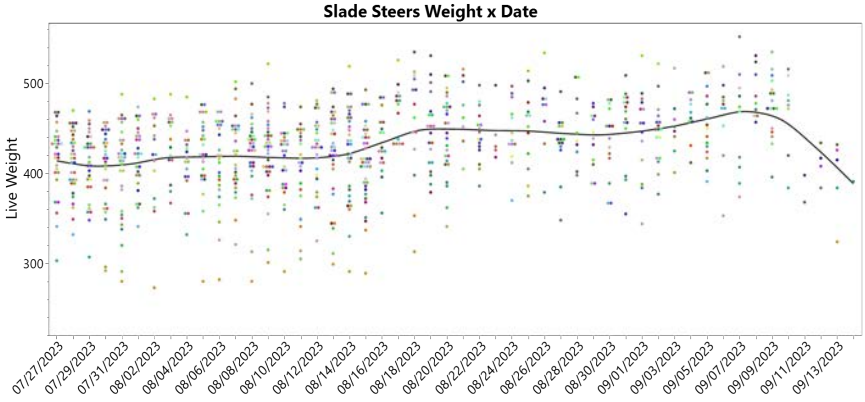

Figure 4: Optiweigh data from the steers between 27 July and 14 September 2023, Slade Family, Mount Barker, WA.

Data from the Optiweigh shows the high variability of the weights of individual cattle with large standard deviations recorded (Figure 5). This emphasises the need to ensure good daily throughput to be able to rely on the accuracy of the data. Data should be interrogated where spikes occur as it may be due to only outlier cattle (heavy or light) weighing themselves on that given day. The cattle appear to have a growth spike around the 17th of August. This turned out to be due to the steers pugging up the paddock and creating a hollow area right behind the Optiweigh giving false readings. It caused the algorithm to interpret the cattle as being lighter than they actually were, as more weight was on the back legs and not on the scales. This was corrected by moving the Optiweigh to fresh ground with some gravel added, but also something that farmers need to be aware of.

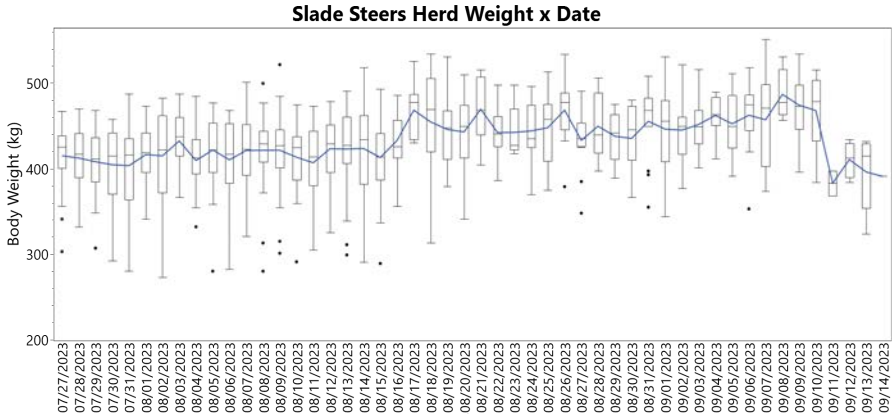

Figure 5: Optiweigh data showing standard deviation, for the steers between 27 July and 14 September 2023, Slade Family, Mount Barker, WA.

The Optiweigh machine was found to be a positive investment for the Slade's, with most of the benefit derived from reduced labour costs (Table 2). Assuming the Optiweigh has a life of 15 years, it was determined that it would take ~6 years to pay off.

Table 2: Summary of the key performance indicators for the Slades family's operation.

Benefit/KPI	Value ($/yr)	Value ($/hd)
Reduced labour due to not needing to weigh cattle.	$19,480	$13.1
Reduced time off feed due to not needing to weigh cattle when yarding for other husbandry activities.	$871	$0.6
Improved nutrition management.	$9,516	$6.4

Conclusion

Important learnings so far include having the Optiweigh located in a high traffic area near a food or water source to encourage throughput. High throughput is also achieved by using the correct type of lick for the season. It is also vital to ensure a level surface is maintained where the back feet of the cattle stand while using the Optiweigh to ensure correct weights are recorded.

In this first year of the project, the Optiweigh has been recorded as either a neutral or positive investment for the host farmers. The project will continue through to 2025 with further trialling of the Optiweigh in-paddock weighing system by different producers with different classes of cattle.

Acknowledgements

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