

Comparison of walk-over-weigh and yard weighing of Angus weaner heifers grazing drought affected pasture

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Liveweight (LW) measured using in-field, remote systems can occur at high frequency and overcome time-consuming and potentially stressful procedures associated with yard and race weighing. This study evaluated Walk-over-Weighing (WoW; Tru-Test[®]) compared with conventional weighing (Yards), as part of an assessment of input data for feed efficiency testing at pasture. Forty Angus weaner heifers were automatically weighed using WoW and weighed weekly through Yards, located 100 m apart. They were monitored for 56 days while grazing within two groups of 20. Each group grazed drought affected, low quality mixed perennial temperate grasses during repeated 28-day cycles: Phase 1, >1,500 kg DM/ha (7.5% CP and 5.2 MJ/kg DM); Phase 2, <1,500 kg DM/ha (5.9% CP and 5.0 MJ/kg DM). Heifers entered a yard containing their single water source at least once daily through one-way spear gates (one per group) and exited via a spear gate at entry to the WoW unit. RFID tags were read, and LW recorded and transmitted to Tru-Test[®] electronically. An auto-draft remotely directed heifers back into their respective grazing group. LW recorded by WoW were processed using a proprietary algorithm and weekly data provided by Tru-Test[®] which were compared by linear regression with Yard LW. Correlation between WoW and Yard LW at start of the study was 0.98 (RSD, 5.10 kg, LW mean \pm SEM WoW 218.1 \pm 3.90 vs Yard 220.2 \pm 4.01 kg), at end of Phase 1 was 0.97 (6.36 kg, 214.3 \pm 3.8 vs 226.3 \pm 3.90 kg) and at end of Phase 2 was 0.95 (7.14 kg, 204.5 \pm 4.04 vs 215.7 \pm 3.7 kg). Correlations between WoW and Yard for ADG (calculated as slope of weekly LWs on day) were 0.18 for Phase 1 and 0.33 for Phase 2. A better correlation was evident when data for Phase 1 and 2 were combined: $r = 0.51$.

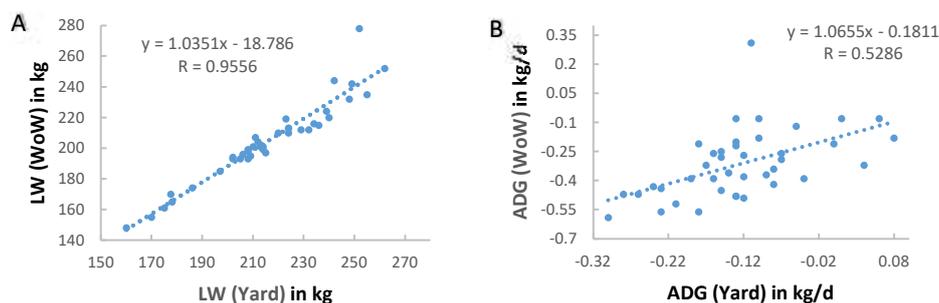


Figure 1. Correlation between Walk-over-Weighing (WoW) and Yard weighing (Yard) for (A) Liveweight (LW) on the end of Phase 2 and (B) Average Daily Gain (ADG) calculated as slope of weekly LWs on day over 56 days for Angus heifers grazing drought affected pasture.

Overall, the WoW system underestimated LW by 5.3% on average. However, at the beginning of the experiment this difference was only 1%. The differences at the end of Phase 1 (5.3%) and Phase 2 (5.2%) were consistent and may possibly differ compared to the start of the experiment due to differences in the gut fill at the time of the weighing. The lesser difference in LW between WoW and Yard at the beginning of the experiment could be due to some variation in the time the heifers were in the yards before weighing while being processed into the experiment. A single outlier was evident (Figure 1A and 1B), potentially due to behaviour when walking through the WoW systems (Dickinson et al. 2013; González-García et al. 2018). Removing the outlier resulted in increased correlations from 0.95 to 0.98 for LW at the end of Phase 2 and from 0.52 to 0.63 for ADG over the 56 days. The results of this study demonstrate consistently strong correlations between LW measured using WoW and Yards, but lesser association between growth rates determined using WoW and Yards at the low or negative growth across the experimental periods.

References

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