



POSTER PRESENTATIONS

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Comparing the use of enrichment items by cattle in a high containment facility

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Background

Interacting with environmental enrichment can reduce morbidity, aggression and stereotypic behaviours improving both Animal Welfare and scientific data output.¹ High containment facilities are limited on space, do not have natural scenery, the cattle are kept in together, in small

groups and have frequent close contact with humans which can create a potentially stressful environment.

The provision of environmental enrichment inside high containment facilities is more valuable but inconvenient and it is important to know which items are most effective to improve Animal Welfare.



Figure 1.

This study tested a hay net, clean empty chemical drum, kong ball and knotted rope to establish which items the cattle preferred to interact with and what had the most enrichment potential.

Method

A broom head and salt lick were placed in each of the pens as the control for the enrichment. Each pen except for a control pen was given 1 test item for 1 week and then swapped. All items were hung using natural rope to allow a swinging motion and easy access. The cows were observed via close circuit television (CCTV) for 5 minutes each at 2 set times and 1 random time every day to maximise the representation of their whole day² (Figure 1).

The set times for the observations were 10:00 and 18:00 when the cows were most active outside of their feed times. This had previously been identified and noted as pre-study data.

Figure 2 shows the total length of time the cows spent interacting with their environmental enrichment. They spent significantly more time with the hay net than the other items ($P < 0.01$).

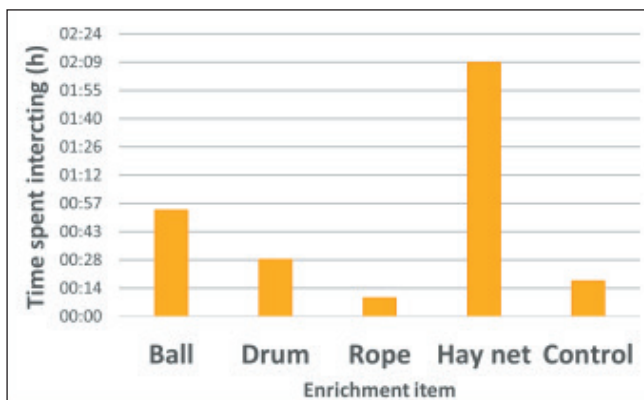


Figure 2.

Figure 3 shows the total number of times the cows interacted with the environmental enrichment items. The hay net, ball and drum were not significantly different from each other ($P > 0.05$).

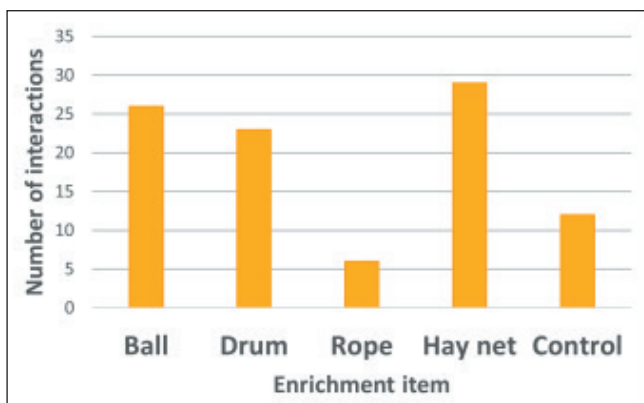


Figure 3.

Results

The Kruskal-wallis statistical test method was applied using $P < 0.05$ for significance.

The winner was the hay net!

The cows interacted the most frequently and for the longest period of time with the hay net. This combined foraging and playing together resulting in long interactions and long-term interest. (see Figure 4)

The ball and drum were both successful environmental enrichment and were utilised in similar ways (headbutting, chewing, swinging) perhaps due to their structural similarity. They were played with as frequently as the hay net but for shorter periods of time (see Figures 2 and 3).

The rope was played with less than the control items and was deemed as an unsuccessful environmental enrichment aid. Interest in each of the items decreased with time as the novelty wore off ($p < 0.01$).



Figure 4.

Conclusion

This study recommends the hay net as the most effective enrichment item for cattle in a high containment environment. This may be due to the nutritional incentive along with the daily novelty created by refilling it each morning to maintain their interest. The drum and ball are also effective enrichment and were very popular for repeated short play, engaging oral manipulation and headbutting behaviours. The knotted rope was rarely interacted with and is not recommended.

The cows' interest in the control items remained relatively constant reinforcing their use as minimum environmental enrichment for essential behavioural outlets e.g. grooming.

To maximise Animal Welfare, introduce a variety of items sporadically to prevent habituation/boredom thus making them redundant.

References

- ¹ **Mandel et al.** 2016. *J. Dairy Sci* (99) p1695-1715.
- ² **Eisenhauer & Hanks** 2020. *Environmetrics* 31(6) p2618.

Acknowledgments

Anna Roberts PhD, Simon Ratcliffe.