

COMPARING PRODUCTIVITY OF C57BL/6J: CORNCOB BEDDING V.S ASPEN BEDDING

Authors: Nur Zahfirah, Sarmilla Nelameham, Muhammad Khairul & Michelle Khoo,
Invivos Pte Ltd, Singapore

Supervisor: Dr. Bethur N, Invivos Pte Ltd, Singapore

Introduction

C57BL/6J is an inbred laboratory mice that is commonly used in research thus reaching optimum breeding performance is crucial. It is important to select suitable bedding material for rodents as it has a presumably direct effect on breeding performances. A good bedding material should be absorbent, prevent ammonia buildup, safe for animal use, cheap and will be able to provide a clean and comfortable environment for the mice. Natural wood-derived Aspen bedding is commonly used in lab for its absorbency and its ability to control odour. Not only it is economical but it provides a natural habitat for the mice. Corncob bedding which is made from granulated corn cob has high ammonia absorbency, inexpensive and contains no dust particles. We hypothesized that the breeding performances is associated with the type of bedding.

Materials

1. 50 Individually Ventilated Cages (IVC) mice cages (split into 2 groups of 25)
2. Diet (Altromin brand)
3. Nesting material (2 pieces of c-fold towel per cage)
4. Corncob bedding
5. Aspen chip bedding
6. Cage cards for recording of data

Methods

50 breeding pairs of sexually matured C57BL/6J mice were mated (1:1) and were separated into 2 groups, 25 pairs consisting of corncob bedding while the other 25 pairs consisted of aspen chip bedding. The pairs were kept for 25 weeks ensued mating. These cages followed the scheduled cleaning and servicing of IVC to ensure a clean microenvironment for the animals and to allow physical weekly checks to be made. Breeding records such as litter born and litter weaned were recorded respectively on the cage cards.

Results and Discussion



Aspen Bedding

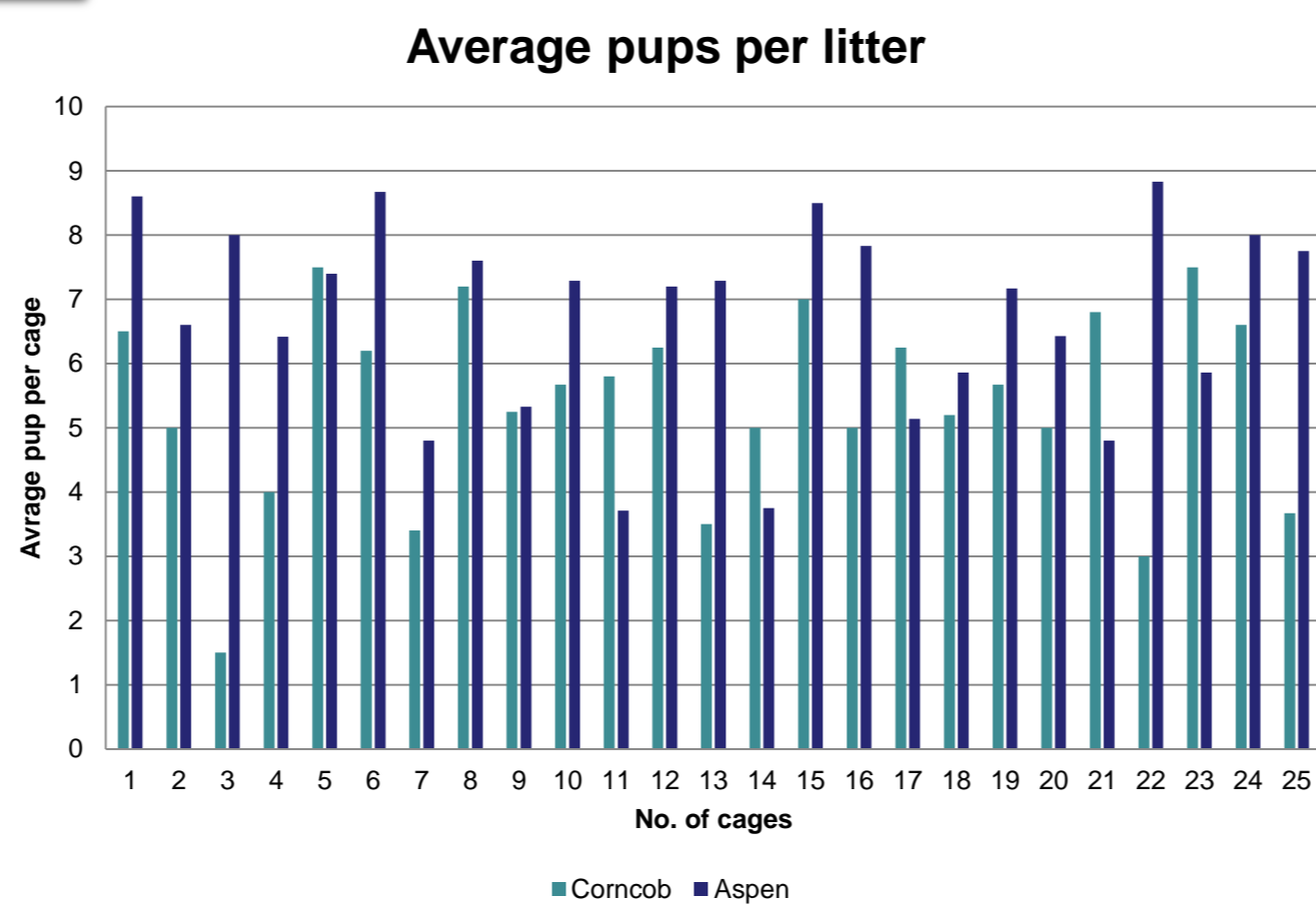


Fig 1: Average pups per litter size of each individual 25 cages

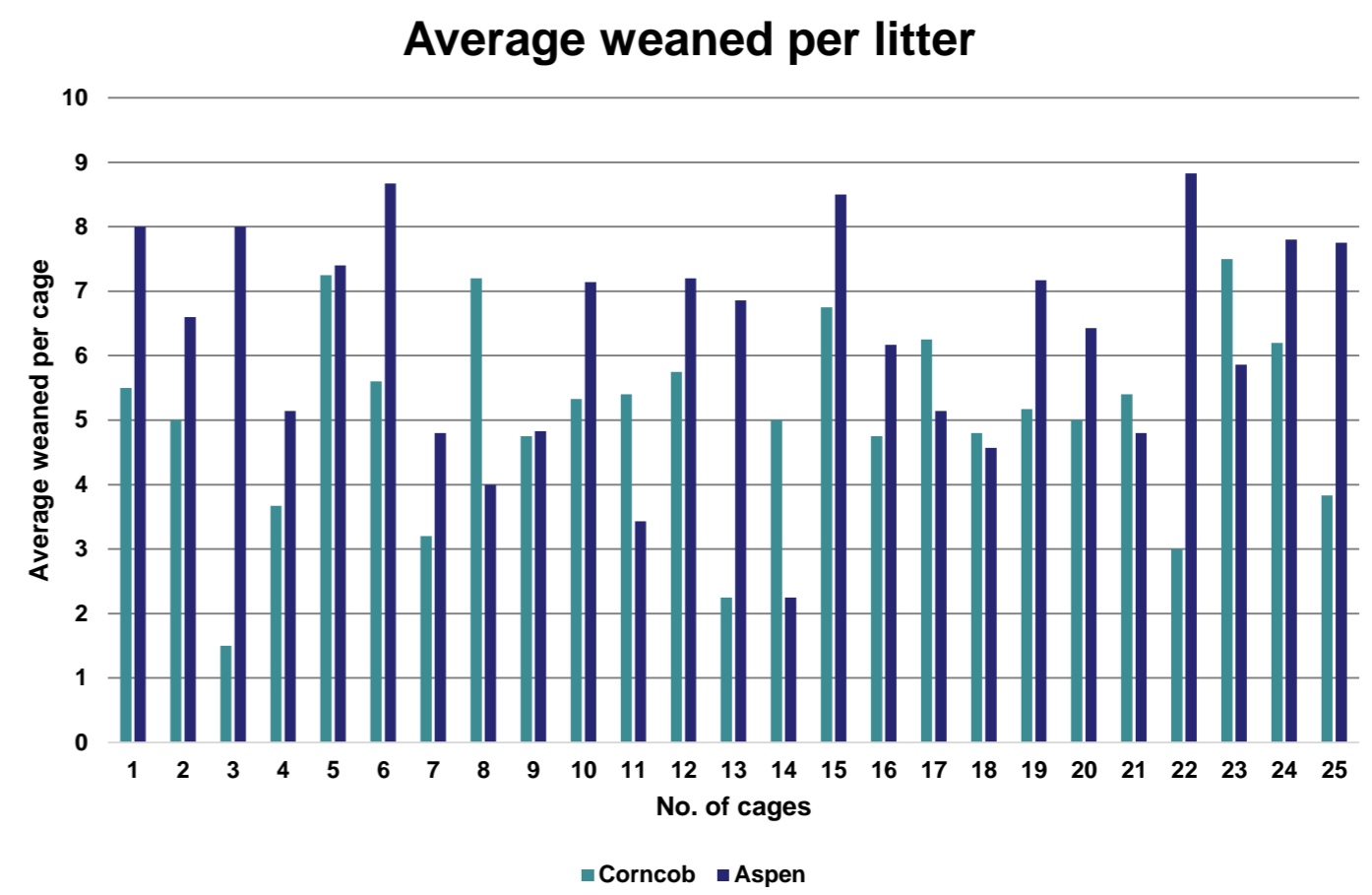


Fig 2: Average pup weaned per litter of each individual 25 cages



Corncob Bedding

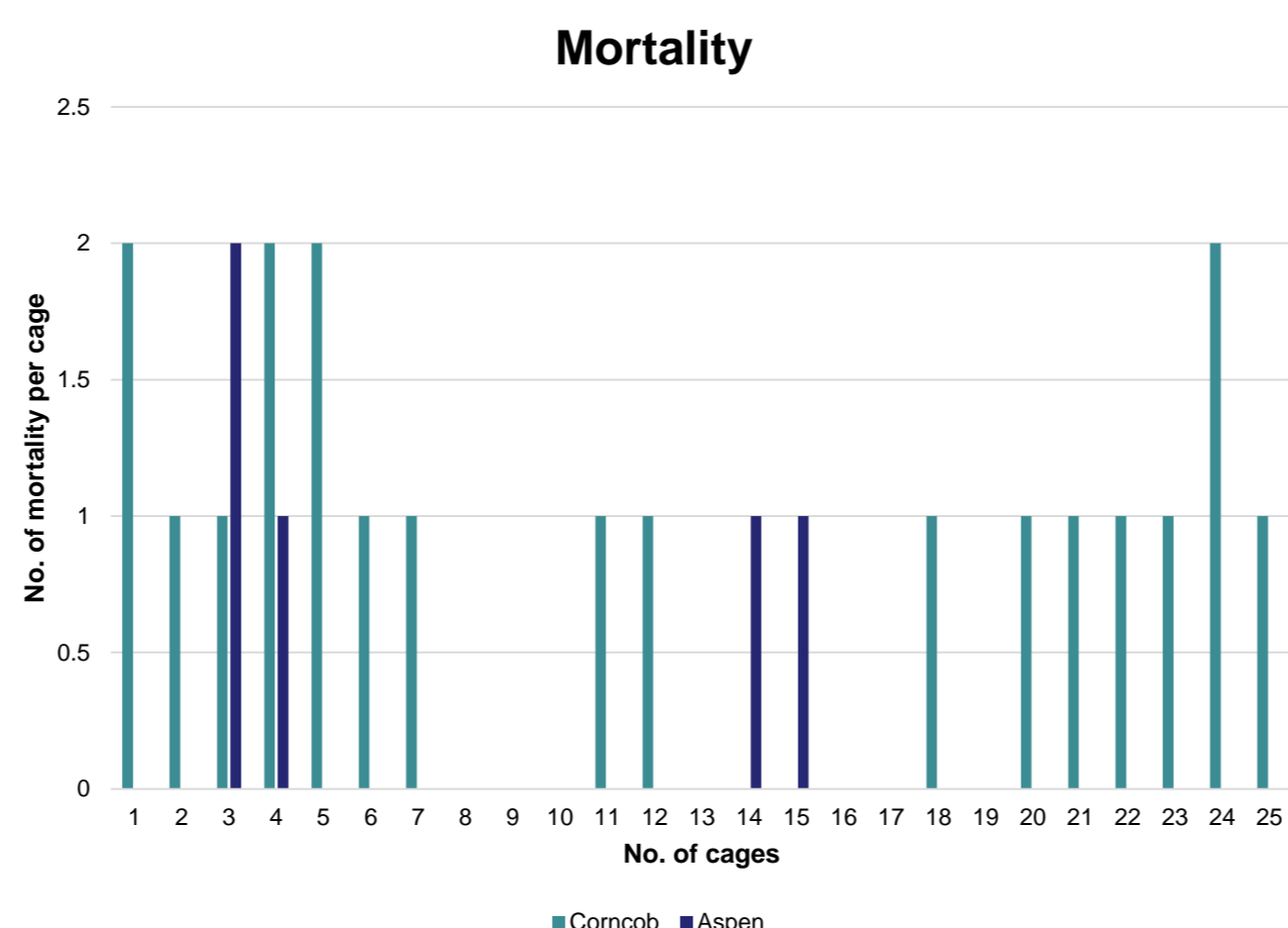


Fig 3: Average mortality for each cage

Comparison between Aspen and Corncob

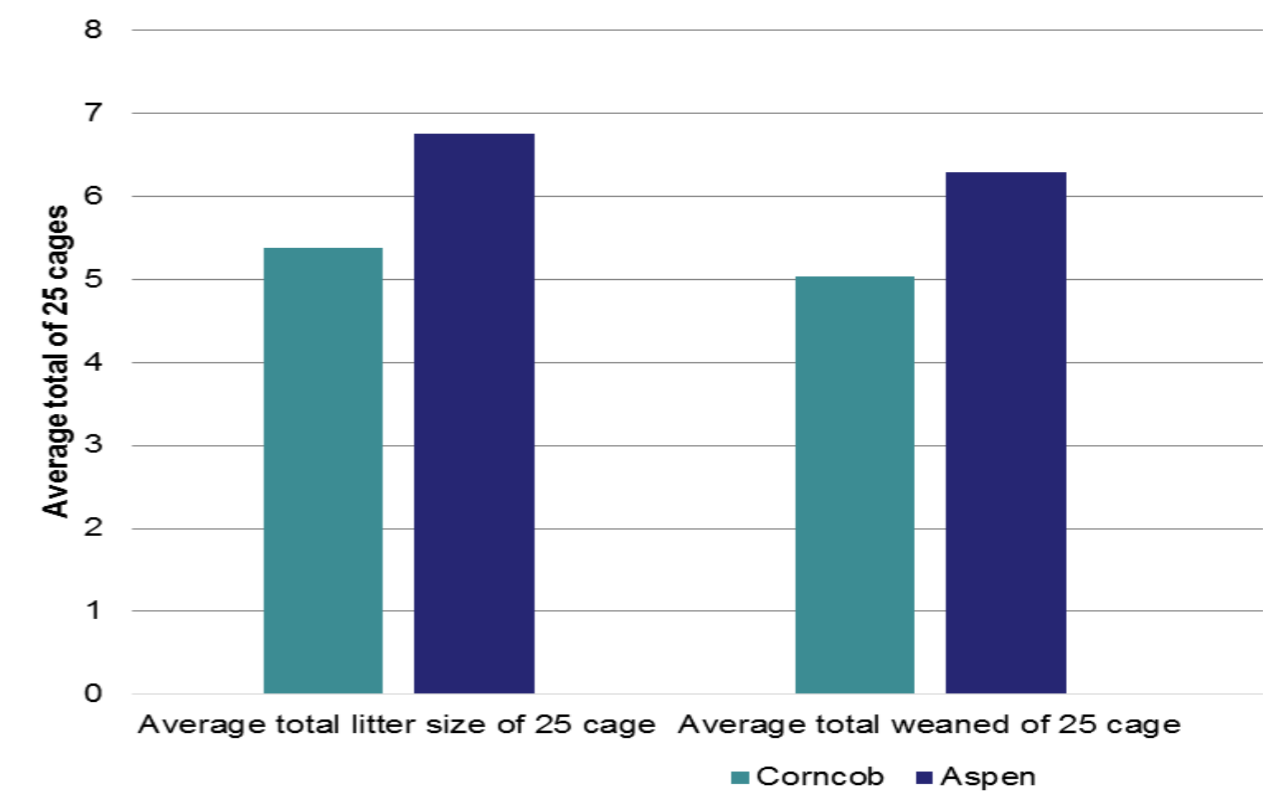


Fig 4: Overview of productivity between aspen and corncob

Type of Bedding	Average total litter size of 25 cage	Average total weaned of 25 cage
Corncob	5.38	5.04
Aspen	6.75	6.29

Table 1

- Fig 1 - Shows higher pup size in each individual cage with aspen
- Fig 2 - Average pup weaned per litter is higher in aspen
- Fig 3 - The mortality observed is comparable among 2 types of bedding and across 25 cages
- Fig 4 and Table 1 - The total litter size for 25 cages with Aspen bedding is greater than corncob with an average value of 6.75
- Fig 4 and Table 1 - Total pups weaned is higher in cages with Aspen. The average value of 6.29 for total weaned of 25 cage, clearly proves this.

Conclusion

Bedding plays an important role in the husbandry of mice. Our study was based on the hypothesis that the type of bedding used affects the reproductivity of mice. The breeding performances of C57BL/6J mice, housed either on corncob bedding or aspen bedding, were compared. Based on the results, the reproductive parameters were higher with Aspen bedding compared with Corncob. Aspen bedding promotes healthy breeding and improves survival rate of the mice.

References

<https://www.alnmag.com/article/2009/12/mouse-bedding-and-enrichment>
<https://www.thespruce.com/aspen-wood-shavings-as-pet-bedding-1238797>
 PDT-SOP-12: Mating Mice & Rats
 PDT-SOP-15: Retiring of Mice & Rats
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4181685/>

<http://www.biocob.com/>