

# Beef-on-dairy and Holstein Calves: Should we mix or keep them separately?

Behavioural and Performance Impacts of Breed and Pair composition during the preweaning phase



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Not all calves behave the same: breed composition and who they are housed with can reshape preweaning behavior and challenge responses

## GOAL

Evaluate the effects of **breed composition** (Holstein vs. Beef-on-dairy [Angus × Holstein]) and **pair composition** on performance, behavior, and behavioral responses in standardized tests

## INTRODUCTION

Beef-on-dairy (BoD) calves are increasingly common on dairy farms, yet **little is known about their behavior** or how social housing with purebred dairy calves may influence behavioral responses.

## MATERIALS AND METHODS

### Study 1



8 BoD  
24 Holstein



#### Behavioral Observations

Scans, 6–7 d until weaning, 5 times/week.



#### Body weight

At 30, 60 d and weaning.

### Study 2



11 Mixed pairs  
(Holstein + BoD)



13 Holstein pairs  
(Holstein + Holstein)



7 BoD pairs  
(BoD + BoD)



#### Behavioral Observations

Scans, 19 ± 2 d until weaning, 1 time/week.



#### Food neophobia tests

Test 1: 19 d, Test 2: 48 d



#### Novel Object Tests

Test 1: 16 d, Test 2: 41 d



#### Unknown Human Test

65 ± 3 d



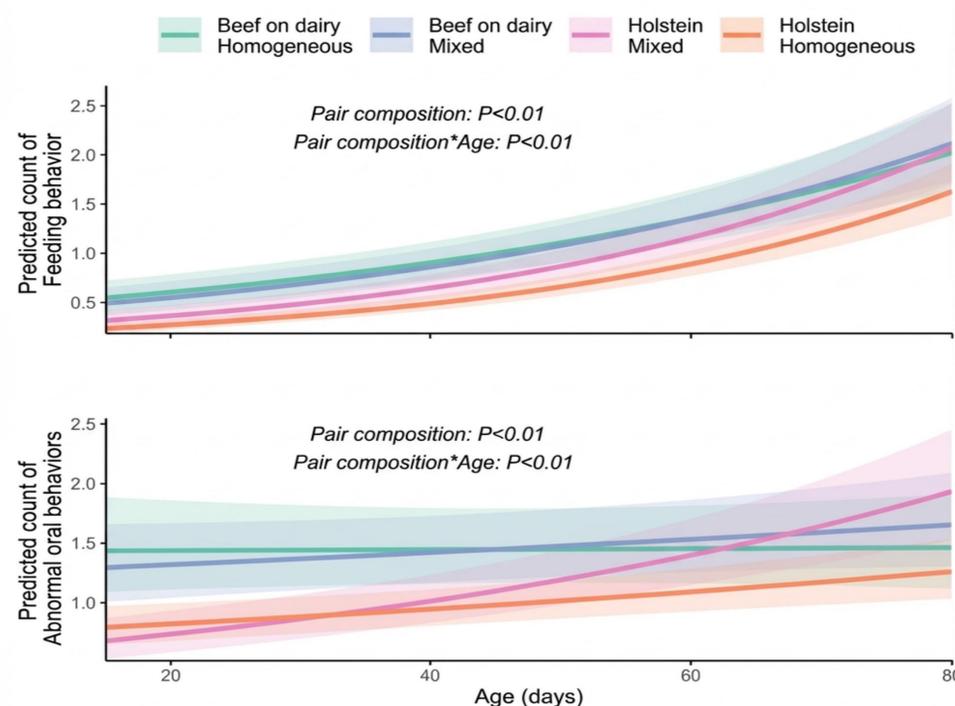
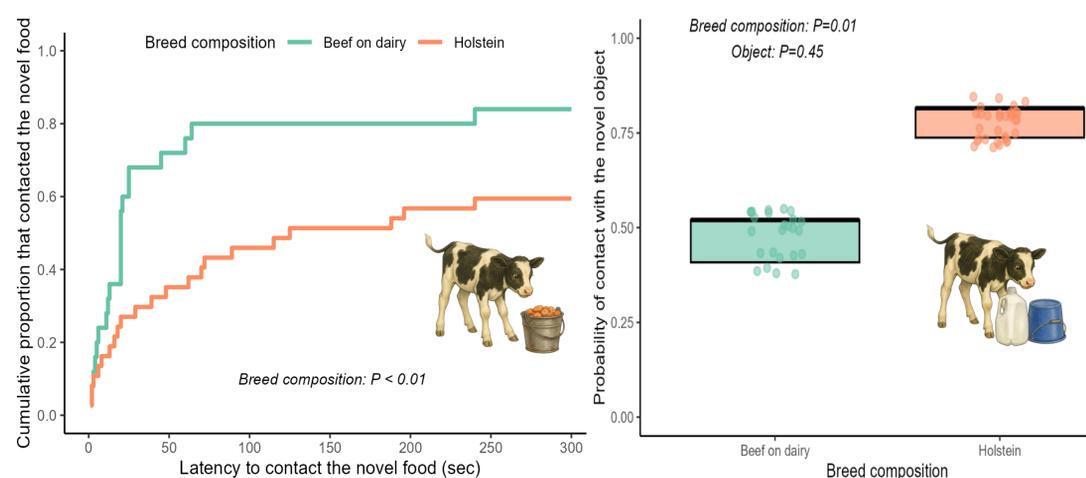
#### Body weight

Weekly, from 15 d to weaning.

- Data were aggregated to calculate daily and cumulative behaviour values, and were analyzed using generalized mixed models including breed, pair type as a covariate, and age as fixed effects, with pair and calf included as random effects.

## RESULTS

- Holsteins** showed more scans of exploratory behavior and fewer **idle**, whereas **Beef-on-dairy** calves performed more **feeding** and **abnormal oral behaviors**.



**Holsteins** in mixed pairs showed more scans of **feeding** and **abnormal oral behavior** and fewer **idle behavior** compared with Holsteins in homogeneous pairs.

- BoD calves** showed **greater body weight** than Holstein, without a pair composition effect.

## CONCLUSION

**Breed composition influences behavioural responses** to novelty tests, as well as exploratory, feeding, and abnormal oral behaviours. **Mixed pairing affected Holstein calves** by increasing feeding behaviour and abnormal oral behaviours.