



## GROUP HOUSING PREWEANED DAIRY CALVES: SOCIALIZATION VS. DISEASE TRANSMISSION

By

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# Group Housing Preweaned Dairy Calves: Socialization vs. Disease Transmission

Hand-rearing dairy calves away from their dams may alter calf behavior development, especially social behavior.

Traditionally, dairy producers have invested in individual hutches or pens to raise newborns to weaning, but pair or group housing systems are increasing in popularity and may potentially improve calf social behavior development. Research on calf behavior has shed light on the potential effects of individual versus pair or group housing. The objective of this publication is to provide a brief summary of the advantages and disadvantages of calf group housing for dairy producers and veterinarians considering this type of housing system. In particular, this publication focuses on calf behavior, health, and performance. Please consult WSU Extension Publication EM045E [Dairy Calves and Their Environment: Improving Health, Welfare, and Performance](#) for detailed information on dairy calf housing systems.

## Behavior

A calf reared by its dam in a natural environment spends its time either alone or with its dam until it is about one week old and begins interacting with other calves. Rearing dairy calves in individual hutches or pens from birth to weaning may have a detrimental impact on a calf's social development (Bøe and Færevik 2003). Calves raised in pairs or groups demonstrate several favorable behaviors over calves raised individually. Some of these behaviors include decreased aggression, increased lying time, and an increased amount of time spent at the feeder. Decreases in aggressive behaviors improves not only animal and handler safety, but also minimizes the number of agonistic interactions and displacements (one animal forces another animal to move) that occur near feeding areas, which is a behavior commonly noticed when grouping or regrouping animals (Miller and Woodgush 1991). An increased amount of time spent at the feeder is associated with higher starter feed intakes and growth rates (De Paula Vieira et al. 2010). Group

housed calves also begin eating novel foods before individually housed calves (Costa et al. 2014). Feedstuffs used in rations on a dairy may routinely change according to feed price fluctuations and availability, so the ability of cattle to more easily accept and consume different feeds is noteworthy. Table 1 summarizes the behavioral differences seen in pair or group housed calves when compared to individually housed calves. For example, calves reared in a pair housing system are 71% more social than calves reared individually (Jensen and Larsen 2014).

## Health

During the first 90 days of life, approximately 23% of calves will develop one or more diseases. Diarrhea is more prevalent than respiratory disease during the first six weeks of life with most diarrhea cases reported during the first week (Svensson et al. 2003). Producers and veterinarians are concerned group housing will lead to even more calf health issues. A couple of studies (including Wells et al. 1996 and Kung et al. 1997) have found no differences in the number of treatments (treated with medications such as antibiotics) administered to calves or calf mortality rates when comparing calves in group housing versus individual housing; however, differences in health have been detected in other studies. Based on these studies, individually housed calves tend to have lower rates of respiratory disease (Cobb et al. 2014) and therefore lower treatment rates and decreased potential for the development of antibiotic resistance (Duse et al. 2015). Due to the lack of consistent results, a multitude of questions remains unanswered in regards to how pair or group housing impacts calf health. Table 2 highlights the effects of pair, group, or individual housing on calf health. For example, calves reared in pairs have a 13% lower heart rate when exposed to a novel environment than calves reared individually, indicating that pair-housed calves may cope with stressful situations more easily (Jensen and Larsen 2014).

Table 1. Effects of pair or group housing on calf behavior in relation to individual housing.

	Aggression <sup>1</sup>	Time Before Eating Novel Foods <sup>2</sup>	Social Interactions <sup>3</sup>	Time Spent at Feeder <sup>4</sup>	Time Before First Visit to Feeder <sup>5</sup>
Pair Housing	32% Decrease	N/A	71% Increase	26–59% Increase	42–82% Decrease
Group Housing	60% Decrease	50% Decrease	N/A	N/A	N/A

<sup>1</sup>De Paula Vieira et al. (2012); Bøe and Færevik (2003).

<sup>2</sup>Costa et al. (2014).

<sup>3</sup>Jensen and Larsen (2014).

<sup>4</sup>De Paula Vieira et al. (2010); Duse et al. (2012).

<sup>5</sup>De Paula Vieira et al. (2010); Duse et al. (2012).

Table 2. Effects of pair, group, or individual housing on calf health.

	Respiratory Disease Incidence <sup>1</sup>	Heart Rate during Novel Environment Test <sup>2</sup>	Odds for Antibiotic Resistance in <i>E. coli</i> <sup>3</sup>
Pair Housing		13% Lower	
Group Housing		N/A	
Individual Housing	57–71% Reduction		50% Decrease

<sup>1</sup>Cobb et al. (2014).

<sup>2</sup>Jensen and Larsen (2014).

<sup>3</sup>Duse et al. (2015).

Table 3. Effects of pair or group housing on calf performance, in relation to individual housing.

	Prewaning Starter Intake <sup>1</sup>	Postweaning Starter Intake <sup>2</sup>	Average Daily Gain <sup>3</sup>
Pair Housing	37% Increase	18% Increase	14% Increase
Group Housing <sup>4</sup>		18% Increase	16% Increase

<sup>1</sup>Jensen et al. (2015); De Paula Vieira et al. (2010).

<sup>2</sup>Cobb et al. (2014).

<sup>3</sup>Jensen et al. (2015); Valníčková et al. (2015).

<sup>4</sup>The outcomes associated with group housing greatly vary depending on group size. Larger groups tend to result in additional calf health complications (Svensson et al. 2003).

## Performance

Taking into consideration the behavioral and health implications of pair or group housing, many producers are interested in how calf performance may be affected by these housing systems. So far, calves housed in pairs or groups tend to have higher starter intakes and, in turn, higher average daily gains than individually housed calves. Calves housed in pairs and groups may have average daily gains that are 14% and 16%, respectively, higher than calves housed individually (Jensen et al. 2015; Valníčková et al. 2015; Table 3).

## Additional Considerations

Advantages and disadvantages exist for individual, pair, and group housing systems. Before deciding which housing system is most appropriate for a dairy, producers should also consider the following:

- Cleaning protocols for calf care equipment (pens, buckets, bottles, etc.) should be in place and all calf care employees should be trained on proper cleaning procedures.
- Consult a veterinarian before drastically altering calf management practices.
- Colostrum management (quality and quantity) is vital to calf success regardless of housing system.

## Related Resources

[Veterinary Medicine Extension: Calf Housing & Environment](#)

[Veterinary Medicine Extension: Resources](#)

[WSU Dairy News](#)

## Summary

Following best management practices for calf care will ensure that the time and effort invested into calves result in healthy, high-producing cows with excellent well-being. When considering pair or group calf housing systems, producers and veterinarians need to carefully consider the potential advantages (improved calf growth and social behavior development) and disadvantages (disease transmission) of these systems.

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