



## Minnesota Dairy Team

*Educating the dairy industry on  
today's and tomorrow's dairy technologies.*

# Group Housing

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The post-weaning period is a time when calf housing and socialization is also changing dramatically forcing the calf to endure some very stressful changes. This can cause a drop in dry matter intake and an increase in respiratory problems as the calves are directly exposed to herdmates and a new environment for the first time. What are some management practices that can be used to lessen the risk and disease incidence when grouping calves?

# Calf Housing and Environment

**Table 11.1. Replacement heifer resting area space requirements per animal.**

Resting space does not include walk alleys for animal movement to and from feeding areas. Group pens for calves are usually fully bedded to provide as much dry resting space as possible. Free-stall sizes can be found in Table 11-5.

Age (months)	Weight (pounds per head)	Self-cleaning Resting Area <sup>a</sup> (square feet per head)	Minimum Bedded Resting Area (square feet per head)	Slotted Floor (square feet per head)	Paved Outside <sup>e</sup> Lot (square feet per head)
0-2 <sup>c</sup>	90-170	Do not use.	32 (4 feet x 8 feet hutch with 4 feet x 6 feet outdoor run) 28 (4 feet x 7 feet pen in barn)	Do not use.	Do not use.
3-5 <sup>c, d</sup>	170-330	Do not use.	28 <sup>b</sup>	Do not use.	Do not use.
6-8	330-500	10	25 <sup>b</sup>	12	35
9-12	500-710	12	28 <sup>b</sup>	13	40
13-15	710-860	15	32 <sup>b</sup>	17	45
16-23	860-1240	18 <sup>b</sup>	40 <sup>b</sup>	25	50
Springing heifer	1270	Do not use.	50 <sup>b</sup>	Do not use.	50
Dry cow					
• Far-off	> 1300	20 <sup>a</sup>	50 <sup>b</sup>	35	55
• Close-up	> 1300	Do not use.	100 <sup>b</sup>	Do not use.	Do not use.

<sup>a</sup> 8 percent slope (1 inch per foot).

<sup>b</sup> Assumes access to 10-foot wide scraped feed alley or paved outside lot.

<sup>c</sup> House separately from older animals.

<sup>d</sup> Groups up to six head in pens or super calf hutch.

<sup>e</sup> Heifers and dry cows in late pregnancy may have difficulty breathing if they lie facing downhill on self-cleaning floors.

<sup>f</sup> Provide proper treatment for concentrated runoff.

Source: MWPS-7 Dairy Free-stall Housing and Equipment, Table 1-4.

Space requirement guidelines for housing calves and heifers.

# Calf Housing and Environment

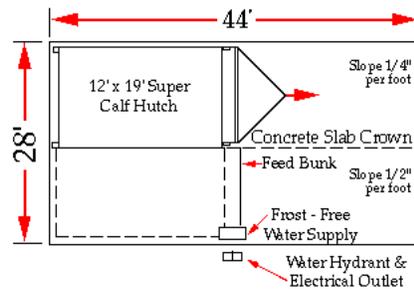
**Table 11.3. Minimum bunk space requirements.**

Type	Age (months)					Mature Cow
	3-4	5-8	9-12	13-15	16-24	
<b>Feed always available</b>	inches per animal					
Hay or silage	4	4	5	6	6	6
Mixed ration or grain	12	12	15	18	18	18
<b>All animals eat at once</b>						
Hay, silage, or ration	12	18	22	26	26	26-30

Source: MWPS-7, 7th Edition, 2000.

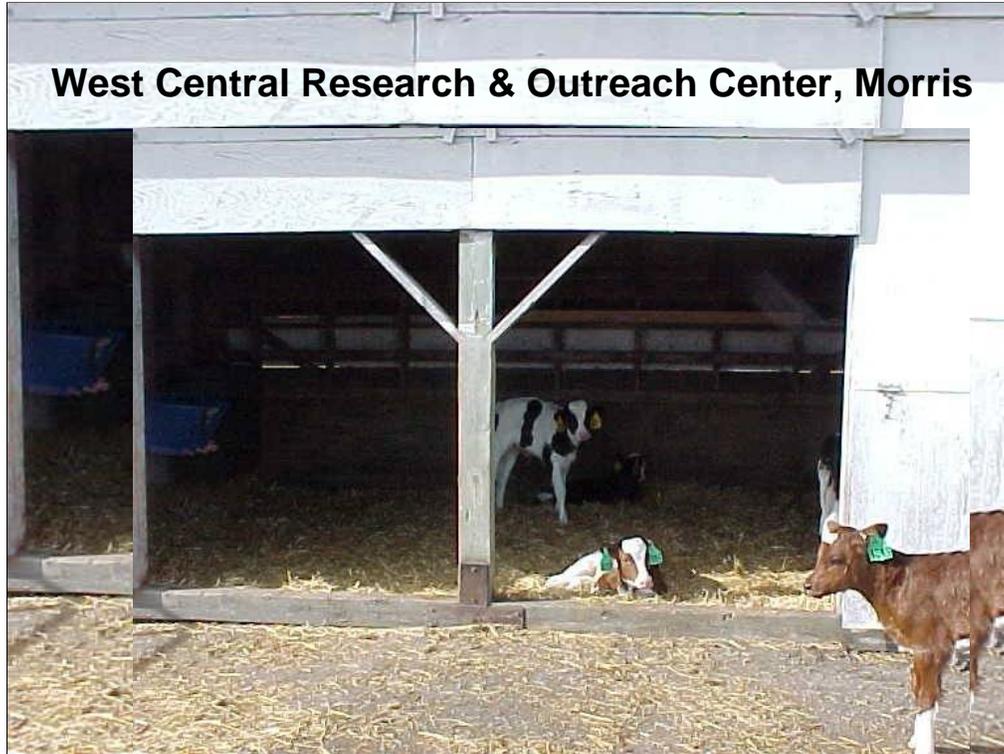
Bunk space requirements depend upon the feeds fed and the feeding method used.

# Environment



- “Super calf hutch” or “counter slope barn” designs are suitable for calves after weaning for grouping, and convenient in feeding/cleaning.
- Place on a drivable surface for easy moving.

The environment into which a post-weaned calf is placed is very important to its growth and development. One type of housing method that works well on many farms is the Super Calf Hutch. By placing it on a pad that is twice the length of the hutch, cleaning is easily done by simply hooking onto the skids and moving it one space over.



Trials on grouping dairy heifer calves in Super Calf Hutches before weaning have been conducted at the West Central Research and Outreach Center in Morris.

## Group Feeding young calves

### Pro's

- Labor for feeding calves is reduced
- Calves are socialized for group living
- Group learning occurs – especially for early starter consumption.
- Growth is equal to individual housing in most cases.
- Adequate growth of .75 to 1.5 lb/day depending
- on milk feeding level
- Easier to bed and clean super hutches than individual hutches

Johnson, U of MN 2006

Let's review some Pro's and Con's of group feeding young calves. First the 'Pro's'.

# Group Feeding young calves

## Con's

- Calves must be aggressive eaters when they are grouped
- Weak calves need to be separated
- Calf attendant must be a good observer
- If age spread is large the oldest calves will have delayed weaning or youngest will be weaned too soon
- Contagious disease may affect more calves

Johnson, U of MN 2006

Group feeding has some 'Cons' as well.

## Tips for group feeding systems

- Separate newborn from fresh cow ASAP and hand feed colostrum
- Train calf to drink from a firm nipple in an individual pen during colostrum feeding period
- Do not add a new calf to a group until it is a fast aggressive sucker. Most are ready by the third day.
- Consider calves < 75 lb to be at risk and require careful observation, especially during winter.
- Feed at least 1.1% of birth weight of a high quality milk replacer powder. Calves fed > 2% may be loose initially

Johnson, U of MN 2006

This slide and the three following offer some tips for successfully feeding calves in groups.

## Tips for group feeding systems

- Restrict range of age and size within a group when possible. One week range works well, more than 3 weeks increase milk feeding cost for the group as weaning is based on the youngest calf in the group.
- A super hutch works well for 8-10 calves
- Leave the nipple feeder with the group so they suck it instead of each other.
- Provide abundant water, bedding, and an outside exercise area.
- Wean when average starter intake is 1.5-2 lb/day for 3 consecutive days. When moved to a grower facility maintain original group at least 1 week before remixing.

Johnson, U of MN 2006

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**SROC Calf and Heifer Research and Extension Facility – grouping calves prior to moving to grower heifer pens**



Research at the Southern Research and Outreach Center in Waseca, MN was conducted on post weaned calves to determine if grouping calves prior to moving them to a grower barn with group pens would be more beneficial for the health and performance of dairy calves going through the transition to group housing.

## Different grouping strategies while fed a common diet

- 108 Holstein heifer calves -- three 14 day post-weaning transition grouping strategies over a 112 day period.
- **Strategies used for day 1-14 were:**
  - 1) Calves moved immediately from nursery barn to group housing in a grower barn in 6 replicated 15 x 30 ft pens of 6 calves/pen (GM);
  - 2) Calves not moved but changed to group pens within same nursery barn in 6 replicated 7.5 x 23 ft pens of 6 calves/pen (GN); or
  - 3) Calves not moved and continued to be individually housed from day 1-14 in 7.5 x 3.8 ft pens within same nursery barn (IP).
- **On day 15**, calves assigned to GN and IP were moved to the grower barn in 6 replicated pens of 6 calves/pen (GN calves remained in their respective groups).
- During day 1-7 of the study all calves were fed a complete texturized 20.1% CP (DM basis) calf starter and during day 8-14 transitioned to whole corn and pellet 17% grain mix. After the feed transition, all group pens were fed 6 lb/d of grain mix for day 1-28 and 5 lb/d for day 29 -112 with free choice hay.

At SROC, a study was conducted looking at three strategies for grouping calves post-weaning.

## Different grouping strategies while fed a common diet

### Results –

- Transition strategy did not affect calf performance during the first 14 days of the study.
- ADG -- 2.0 lbs;
- Feed/lb of gain ave. -- 2.76 lbs.
- From day 15-112, calves moved immediately had 4% higher daily gains than calves not moved but changed to group pens within same nursery barn.
- The calves not moved and continued to be individually housed from day 1-14 had similar gains to calves moved immediately to group housing in grower barn.
- The calves not moved and continued to be individually housed from day 1-14 utilized their feed 3 and 3.7% more efficiently than the other two groups.
- No differences in body condition score (BCS) and hip height (HH) changes.
- Under the conditions of this study delaying socialization for 14 days resulted in similar growth as compared to calves grouped housed for 112 days.

Results of the study showed that all three strategies resulted in the same performance during the first 14 days. Although there were slight differences amongst the groups from day 15-112, delaying socialization for 14 days resulted in similar growth as compared to calves grouped for 112 days.



Photo of a group pen of calves in a greenhouse using a nursette milk-feeding system.

## Calf and Heifer Housing Space and Grouping Suggestions (Graves, 1996)

<u>Age</u>		<u>Age</u>	
<u>Spread</u>	<u>Group</u>	<u>Spread</u>	<u>Wt</u>
2-4 mo	3-5	3 wk	
4-6 mo	6-12	2 mo	75 lb
6-9 mo	10-20	3 mo	150 lb
9-12 mo	10-20	3 mo	200 lb
12-18 mo	10-20	6 mo	300 lb
18 mo -1st calf	10-20	6 mo	300 lb

Housing space and grouping suggestions for various ages of calves and heifers. Important so all calves within the group can do well and compete equally for lying and bunk space.

## Automatic Calf Feeding Systems

**Many desirable features in new computer feeding systems including:**

- Provision for gradual increases in milk or MR feeding, followed by a decrease in solids fed to encourage weaning.
- Use of a closing device which prevents other calves from disturbing the one at the feeder.
- Provision for computerized feeding of calf starter grains. Incorporate at > 3 weeks of age, as calves may balk at the slower response of delivery of calf starter grain feeding.
- Limit molasses content of calf starters to ~2% so that it flows more freely.
- Systems for disinfection of nipples between calves and sanitization of mixing and storage vessels.
- Use of either pasteurized milk or milk replacers.
- Addition of medication on an individually prescribed basis.

James, Virginia Tech

Automatic calf feeding systems has become of interest recently.

## Automated Calf Feeding Systems



Two automatic calf feeding units, one for milk replacer and the other for calf starter.





Automatic feeder for calf starter.

## Automated Calf Feeding Systems



Two pens of calves, divided by age and size, with a nipple feeder for each pen.

## **Automated Calf Feeding Systems**

- RFID System
- Gravimetric or Volumetric Mixing
- Manual Cleaning of Nipples

Vermeire, Nouriche Nutrition Ltd

## Automated Calf Feeding Systems

- RFID System
- Gravimetric Mixing
- CIP of Machine and Nipples



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## Automated Calf Feeding Systems

- Cleans and Washes Nipples Between Calves



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## **Automated Calf Feeding Systems**

Things to Consider...

- Initial Cost (price)
- Operating Cost – fuel, electricity, labor, need for re-calibration
- Mixing temperature adjustment
- Feeding temperature adjustment
- Cleaning options – manual or automatic?

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