RAISING DAIRY CALVES UNDER VARIOUS HOUSING AND MANAGEMENT SYSTEMS

H. H. Van Horn, M. B. Olayiwole, C. J. Wilcox and J. M. Wing
Dairy Science Department, University of Florida

In spite of a tremendous amount of calf research that has been done in this country on calf feeding and management, calf losses can still run quite high at times due to some management deficiency. Housing systems have been studied much less than nutritional factors and so this experiment is designed to compare calf performance in three housing systems and try to see if specifications for milk feeding systems and starter composition should differ with type of housing.

All calves born from July, 1973 through January, 1974 which were not needed in other experiments were assigned to this study until they were 12 weeks of age. The general design for the experiment included three housing systems, two milk feeding programs and four different calf starter formulas, as follows:

Housing	Milk feeding	Starters
(1) Closed barn (old barn)	(1) Once-day feeding	(1,2,3,4) Four starters
	(2) Twice-day feeding	(1,2,3,4) Four starters
(2) Outside portable pens	(1) Once-day feeding	(1,2,3,4) Four starters
	(2) Twice-day feeding	(1,2,3,4) Four starters
(3) Flush pens	(1) Once-day feeding	(1,2,3,4) Four starters
	(2) Twice-day feeding	(1,2,3,4) Four starters

The closed barn contained 4' x 6' pens with concrete floors which required daily bedding. The portable pens were 4' x 10' pens made from 3/4" pipe covered with woven fence wire for the retaining sides and 1/3 of the pen was covered with galvanized tin to give shelter from rain. The Flush Pens were 2' x 4' with slatted floors made from 1" x 2" cypress slats (some pens with 1" side up and some with 2" side up) or expanded metal. The starters fed were:

Table 1. Calf Starter Formulas*

Ingredients	Starters No. 1	2	3	4
Cottonseed hulls	150	150	---	---
Citrus pulp	300	---	300	---
Gr. shelled corn	240	550	410	720
Soybean meal (49%)	240	220	220	200
Molasses	50	50	50	50
Salt, trace min.	10	10	10	10
Biofos	10	5	10	5
Gr. limestone	---	15	---	15
	1000	1000	1000	1000

*All rations were fortified, per pound of starter, with: vitamin A--2,500 I.U.; vitamin D--300 I.U.; Aureomycin or Terramycin--10 mg.

The calves were assigned to treatments randomly. Male and female calves of all breeds were placed on the experiment until the latter part of the experiment when we were short of pens and only heifers were saved. A total of 120 calves were placed on the experiment and 4 deaths occurred (2 from scours-pneumonia complex, 1 from a faulty heart, 1 strangled). The procedures followed were:

1. All calves were fed a 50:50 mixture of frozen colostrum and whole milk (7 lb/day for Jerseys, 9 lb/day for Holsteins and Brown Swiss). These levels were fed for 3 weeks after the calves were placed on experiment and the level cut in half the fourth week. At the end of 28 days the calves were weaned if they were consuming 1 lb of starter daily.

2. Starter and water were offered free-choice at all times. Daily weigh-backs of refusals were made to measure daily starter consumption.

3. Body weights were taken on all calves one day per week.

4. Calves were maintained in individual pens through the day of body weight measurement after 12 weeks of age.

5. The "flush pens" were washed (hosed) daily.

The results are shown in Table 2.

Table 2. Results

Comparisons	Milk[1] intake (lbs/day)	Feed intake (lbs/day)	DE intake (1,000 cal.)	Weight[2]
Male	3.12	2.30	4.73	110.14
Female	3.18	2.28	4.77	103.94
Calf Starter 1	3.12	2.46	4.73	106.06
Calf Starter 2	3.09	2.72	5.23	112.18
Calf Starter 3	3.27	1.82	4.15	102.20
Calf Starter 4	3.12	2.16	4.89	107.72
Old Barn	3.23	2.30	4.78	108.17
Portable Pens	3.15	2.30	4.86	105.69
Flush Pens	3.07	2.27	4.61	107.26
Milk Once/day	3.14	2.29	4.81	107.39
Milk Twice/day	3.15	2.29	4.69	106.69

[1]Milk intake is an average over the 84 days of the experiment even though milk was only fed through 28 days of age or until calves were eating 1 lb of starter daily. About 15% of the calves were fed about 1 week longer than 4 weeks.

[2]Weights are an average for calves of all breeds used at 42 days of age.

The significant results of this experiment seem to be:

1. Housing did not have a significant effect on gains (or health) of the calves. Thus, the flush system has some advantages because need for bedding is removed and feeding and care is easier.

2. The expanded metal floors in the flush pens were much easier to clean but some calves obtained skinned knees and/or hips by 6 weeks or so of age.

3. Feeding milk once per day was equally as good as twice-daily feeding.

4. Calf Starter 2 with 15% cottonseed hulls was superior to the other rations.