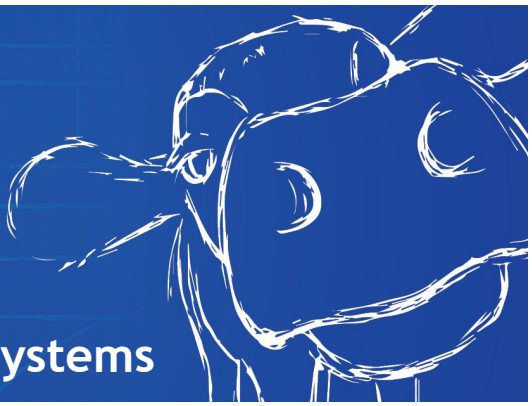
heifer BLUEPRINT

UW Extension
University of Wisconsin-Extension



The Cost of Raising Dairy Calves Using Individual or Automated Feeding Systems

Spring 2018

Lead Authors:

Ryan Sterry
Agriculture Agent
UW-Extension
St Croix County
ryan.sterry@uwex.edu

Matt Akins
Extension Specialist & Assistant Scientist
UW-Extension &
UW-Madison Depart of Dairy Science
msakins@wisc.edu

Peer Reviewed:

Mark Hagedorn
Agriculture Agent
UW-Extension
Eau Claire County
mark.hagedorn@.uwex.edu

DEPARTMENT OF DAIRY SCIENCE
University of Wisconsin-Madison

UW Extension
University of Wisconsin-Extension

The cost of raising dairy replacements is often the second greatest expenditure on the dairy farm. Periodically, UW-Extension Specialists and Agriculture Agents have collected farm level data to benchmark calf and heifer raising costs. For the Summer 2017 update, costs were evaluated with emphasis being placed on labor efficiencies associated with raising dairy calves using an individual feeding system (bottle or bucket) as compared to using an automated milk feeding system.

Data from 24 Wisconsin and two Minnesota dairies were entered into the "Intuitive Cost of Production Analysis" (ICPA) computer model. A few assumptions were made to standardize certain input costs (Table 1).

Table 1. Key Assumptions

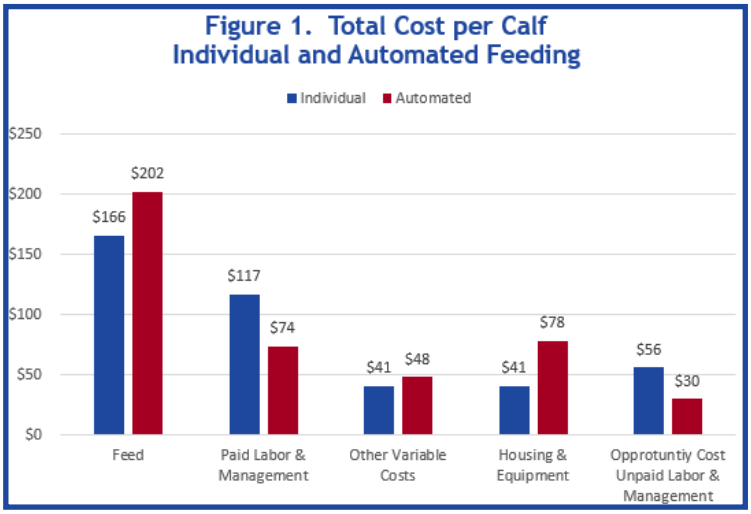
Item	Assumption
Calf Value	$200
Labor (paid and unpaid)	$13 per hour
Management (paid and unpaid)	$22 per hour
Interest Rate	4.5%
Housing	
Homemade Calf Hutch	$200
Purchased Calf Hutch	$400
Greenhouse Barn	$10 per foot^2
Post Frame Calf Barn	$15.50 per foot^2
Feed	
Unsalable waste milk	$8 per cwt
Salable milk	$17 per cwt

All other numbers used in the study were producer-specific and represented real farm costs. Calf rearing expenditures were then benchmarked into four management areas: feed cost, labor and management, variable costs (veterinary service, bedding, death loss, and interest) and fixed costs (housing and equipment).

For this study, a calf was defined as an animal from birth until movement into group housing or movement out of the automated group feeding pen. Fifteen of the farms in the study utilized an automated feeding system and 11 utilized individual feeding systems. Operations were matched by size, however, there were five auto feeding operations raising over 500 calves per year in comparison to one individual feeding operation of this size. Thus, the average size of auto feeding farms are larger, 486 calves per year, compared to 185 calves for individually fed farms.

Automated and Individual Feeding Systems Compared

The total cost to raise a calf in an automated feeder system was greater than individual feeding systems at $431.19 per calf vs. $419.62 per calf. This includes variable costs, fixed costs, and an assigned value to unpaid labor and management, but omits the value of the calf. A breakdown of these costs is show in the Figure 1.

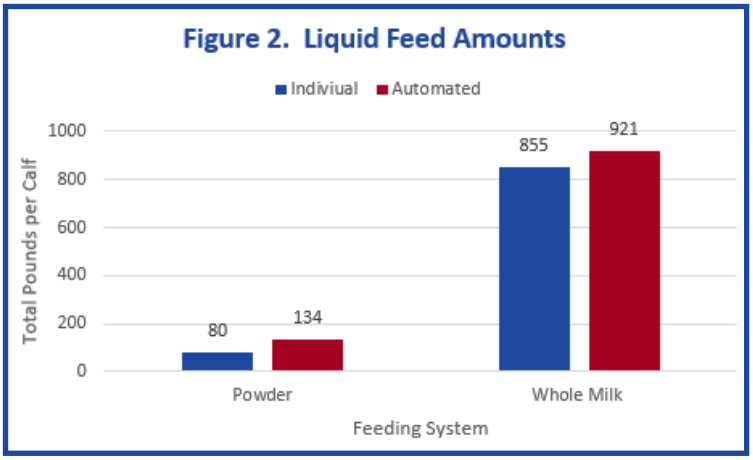


Differences were found in labor costs, feed costs, and fixed costs between the systems. Paid labor and management was $116.52 per calf for individual feeding, and $74.13 for automated feeding.

When the opportunity cost of unpaid labor and management was included, the labor and management costs grew to $172.45 per individually fed calf and $103.74 per calf for automated feeding.

Fixed costs for housing and equipment were greater for automated feeding at $77.69 per calf, compared to $40.89 per calf for individual feeding. Generally, the automated feeding operations had newer housing and equipment. These differences in cost may decrease with time as the equipment and housing depreciate.

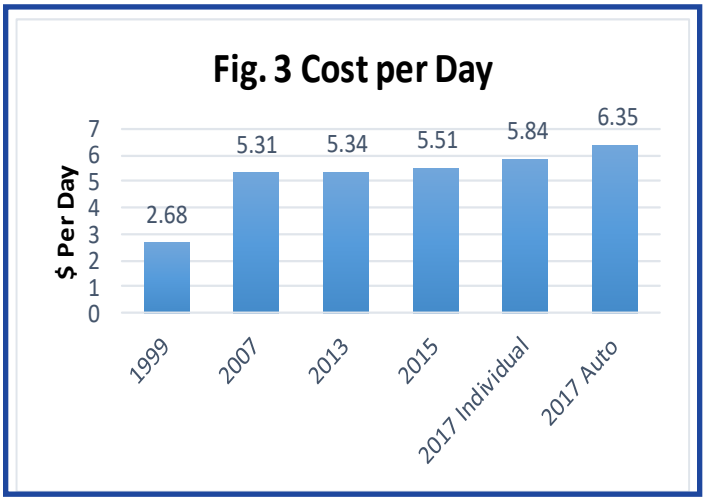
Feed costs also varied between systems. The average feed cost per calf for automated feeding was $202, compared to $173.53 for individual feeding. There was a mix of farms feeding milk replacer and whole milk across systems.



Calves on automated feeding consumed more milk or powder, with the average being 134 pounds milk replacer powder or 921 pounds whole milk. Calves on individual feeding consumed an average of 80 pounds milk replacer powder or 855 pounds of whole milk (Figure 2).

Seven of the 12 operations feeding whole milk also used a balancer (22 lb balancer for those using whole milk and balancer). Across all farms using whole milk (with or without balancer), an average of 16 and 12 lb balancer was fed for automated and individual farms, respectively. When converted to solids on a 12.5 percent basis, calves on an automated feeder consumed on average 131 pounds solids and was similar to intake of milk replacer.

Days on feed (birth to moving) differed slightly between the groups at 70.3 days for individual feeding and 67.8 days for automated feeding. On a daily basis, it cost $5.84 to raise individually fed calves, and $6.35 per day for automated feeding (Figure 3) .



A Closer Look at Feed Costs

Feed costs, specifically liquid feed, was the greatest cost across feeding systems. When feeding higher milk amounts, the use of pasteurized whole milk helped to reduce costs with an average cost per pound at $1.34 per pound for milk replacer powder and $0.72 per pound of whole milk solids. The pasteurizer cost ranged from $1.00 to $15.00 per calf. Using an average of $7.50 per calf, the additional cost per pound of solids equaled $0.05 per pound of whole milk solids for a total cost of $0.77 per pound pasteurized whole milk solids, or per gallon of pasteurized whole milk (12.5 percent solids).

To view the full ***ICPA Research Report*** please visit: https://fyi.uwex.edu/heifermgmt/rearing-costs/.