

4. Financial Feasibility

The purpose of this portion of the feasibility study is to establish a basic financial understanding of all twenty-nine potential dairy systems initially investigated as to their suitability for development in Southeast Missouri. Working with all key stakeholders, twenty-nine different dairy systems were developed and modeled. Each of the twenty nine models differs by scale of operation, type of dairy housing system, manure system, bedding system, and type of ventilation. All of the models were also characterized with picture examples, itemized investments, input summaries of each model and a dairy enterprise budget that was created using the University of Missouri CADSIM model.

While farm financial performance is important in assessing the feasibility of developing dairy operations in Southeast Missouri, it is noticeable that all of the dairy operations that were modeled could be successfully and profitably operated in Southeast Missouri region. Even the smallest scale operations that were modeled demonstrated positive return on assets in the fifth year. Even though operations with the largest scale had the greatest profit potential, they also come with greater complexity and management requirements for these operations to be successful.

Confinement dairy operations resulted in higher investment expenses than grazing dairy operations. The main reason for this is due to the fact that a grazing dairy does not require the high investments in housing systems, manure systems and equipment as a confinement dairy would require. From a financial perspective, the grazing dairies offer a relatively high return on assets with a lower financial risk because less of the investment is concentrated in single purpose livestock structures. Confinement dairies can also offer a good return on assets but also have higher required investments in specialized assets than a grazing dairy.

One of the highest investment dairies is the confinement dairy model with a slatted floor over the manure storage. It would be difficult to achieve good financial performance from this model due to the fact that these operations required major investments in manure storage systems when compared with the other models. With a higher investment in assets, these dairies could achieve a positive return on assets, but considerably lower than other operations modeled. A basic measure of financial feasibility is whether or not the dairy business provides a return on investment greater than the cost of capital.

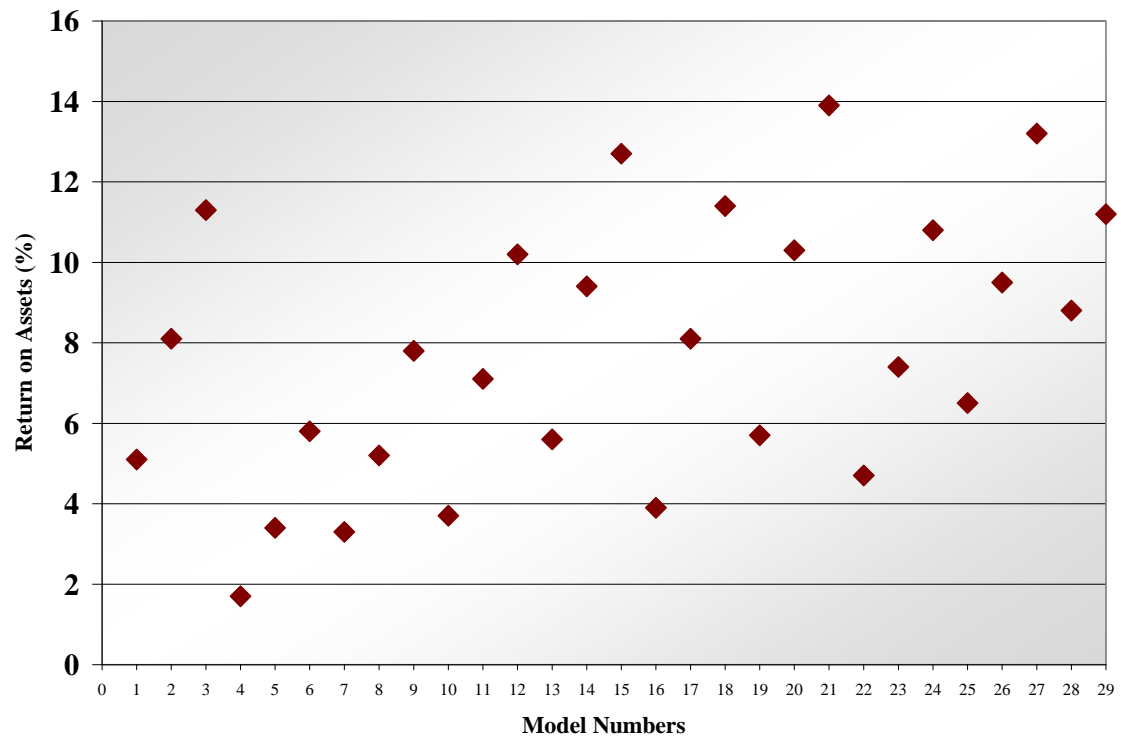
4.1 Return on Assets

For dairy operations, a key measure of profitability is looking at the return on assets (ROA) of the operation. Return on assets is a good indication of the potential financial strength of a dairy operation. An assumption that was made in each model was that the operation was assumed to have 0% debt to reflect the true return on assets of the operation, regardless of leverage. Also, the return on assets that was reported is what was expected in the fifth year of operation, after all startup issues had been resolved. The following table demonstrates the economies of scale in a dairy business. The table shows that the larger the size of the operation, the greater the projected ability of the business to generate a higher return on assets. All dairy systems that were modeled resulted in a positive return on assets in the fifth year.

Table 4.1-1 Southeast Missouri dairy systems – projected return on assets (ROA)

Type	Housing System	Manure System	Ventilation	200 Cow	700 Cow	3,000 Cow	
Confinement Dairy	Bedded pack	Rice hulls/sawdust in bedded pack	Natural	1 5.1%	2 8.1%	3 11.3%	
	Mattress freestall	Slatted floor over manure storage	Natural	4 1.7%	5 3.4%	6 5.8%	
			Mechanical	7 3.3%	8 5.2%	9 7.8%	
		Slurry scrape to covered storage with mechanical separation	Natural	10 3.7%	11 7.1%	12 10.2%	
			Mechanical	13 5.6%	14 9.4%	15 12.7%	
	Sand bedded freestall	Slurry scrape to outside separators (sand & solid/liquid) and covered storage	Natural	16 3.9%	17 8.1%	18 11.4%	
			Mechanical	19 5.7%	20 10.3%	21 13.9%	
		Flush to sand separation basin and round tank	Natural	22 4.7%	23 7.4%	24 10.8%	
			Mechanical	25 6.5%	26 9.5%	27 13.2%	
	Grazing Dairy with Center Pivot	N/A	Holding area capture and spread	N/A	28 (300 cows) 8.8%	29 (600 cows) 11.2%	

Figure 4.1-1. Southeast Missouri dairy systems – projected return on assets (ROA)



4.2 Total Investment per Cow

The information presented in the following table displays the investment per cow necessary in all 29 dairy systems that were studied. Investments for each of the dairy operations include dairy cows, facilities, equipment and minimally required land. Economies of scale allow for investments to be spread out over more dairy animals and result in lower investment per cow as the operational size increases.

The slatted floor manure systems were the most expensive to build, when considered against the other systems. With the highest investment per cow, these slatted floor systems would be the most risky to profitably operate, as demonstrated by the lower return on assets in the previous section. The lowest investment per cow systems were the grazing dairy with center pivot irrigation systems, even though these systems required considerably more land to be purchased among the investments. These dairy operations do not require the high investment in facilities as the other confinement dairy operations required since they do not require the freestall barns and large manure storages.

Table 4.2-1. Southeast Missouri dairy systems - total investment per cow

Type	Housing System	Manure System	Ventilation	200 Cow	700 Cow	3,000 Cow	
Confinement Dairy	Bedded pack	Rice hulls/sawdust in bedded pack	Natural	1 \$6,675	2 \$6,064	3 \$5,419	
	Mattress freestall	Slatted floor over manure storage	Natural	4 \$8,037	5 \$7,852	6 \$7,216	
			Mechanical	7 \$7,718	8 \$7,500	9 \$6,864	
		Slurry scrape to covered storage with mechanical separation	Natural	10 \$7,620	11 \$6,500	12 \$5,864	
			Mechanical	13 \$7,301	14 \$6,224	15 \$5,512	
	Sand bedded freestall	Slurry scrape to outside separators (sand & solid/liquid) and covered storage	Natural	16 \$7,859	17 \$6,489	18 \$5,848	
			Mechanical	19 \$7,540	20 \$6,137	21 \$5,496	
		Flush to sand separation basin and round tank	Natural	22 \$7,667	23 \$6,913	24 \$6,137	
			Mechanical	25 \$7,348	26 \$6,561	27 \$5,785	
	Grazing Dairy with Center Pivot	N/A	Holding area capture and spread	N/A	28 (300 cows) \$5,666	29 (600 cows) \$5,269	