Livestock Development: Update

Ag Lenders Conference 2024

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Discussion topics for today

1. Economic feasibility of hog finishing operations (preliminary results)

2. Announcement to build two large dairies in North Dakota

3. Potential opportunities for ND farmers and RV dairies

Central issue:

- Livestock enthusiasts and other agricultural stakeholders are promoting investments into large modern confined hog finishing operations in North Dakota

- Promotion is mostly targeting corn and soybean farmers as a way to bring back offspring and/or diversify

- Economic information is **not** readily available to potential investors (i.e., crop and livestock producers)

Economic feasibility of hog finishing in ND?

- Study funded by the North Dakota Soybean Council
- $ to support a graduate research assistant (GRA) (Mr. Arif Hossain)
- $ to support a risk assessment modeler (Dr. David Bullock)

Hog finishing: study objectives

- Determine:
  - Net present value (NPV) on a $/pig space and $/operation basis
  - Return on investment (ROI); internal rate of return (IRR)
  - Return to labor and management ($/hour)

- Determine how sensitive results are to input and output prices, investment costs, size of operation, interest rates, etc.

Base-case models (N = 12)

- Two starting weights: 12lb wean-to-finish and 40lb feeder-to-finish
- Two business models: cash versus contract
  - Cash (the operator owns the finishing pigs and provided all inputs)
  - Contract (the integrator owns the pigs and supplies all the inputs, except the labor, utilities, and repairs)
  - Contract (the operator owns the land, facilities, machinery and equipment and receives a contract price per pig space)
- Alternative sizes (1,200-hd, 2400-hd, and 4,800-head) pig spaces/operation
- A single target slaughter weight of 260lb

Today's focus: single model only

- Wean-to-finish (12lbs to 260lbs), 2,400-spaces, contract pricing
- NPV ($/space), NPV ($/barn), IRR (%), labor & management ($/hour):
  - Alternative combinations of interest rates and contract prices
- Results are preliminary!
- We still need to do simulations/sensitivity analysis:
  - Alternative barn sizes, discount rates, cost of utilities, and repairs

Net Present Value ($/space) for Alternative Combinations of Interest Rates and Contract Prices for a 2,400-space Operation

	Contract price ($/space)			
Interest rate (%)	$30	$35	$45	$55
4.5%	-$49.05	$15.99	$146.06	$276.14
5.5%	-$101.48	-$36.44	$93.64	$223.71
6.5%	-$155.96	-$90.92	$39.16	$169.24
8.5%	-$270.57	-$205.53	-$45.45	$54.63

Net Present Value ($/operation) for Alternative Combinations of Interest Rates and Contract Prices for a 2,400-space Operation

	Contract price ($/barn)			
Interest rate (%)	$30	$35	$45	$55
4.5%	-$117,720	$38,376	$350,544	$662,736
5.5%	-$243,552	-$87,456	$224,736	$536,904
6.5%	-$374,304	-$218,208	$93,984	$406,176
8.5%	-$649,368	-$493,272	-$109,080	$131,112

Internal Rates of Return (%) for Alternative Combinations of Interest Rates and Contract Prices for a 2,400-space Operation

	Contract price ($/space)			
Interest rate (%)	$30	$35	$45	$55
4.5%	-3.20%	5.68%	41.24%	74.75%
5.5%	-16.50%	-3.50%	27.57%	61.27%
6.5%	-28.30%	-15.84%	12.73%	47.23%
8.5%	-57.23%	-46.59%	-16.25%	17.08%

Return to Labor and Management ($/hour) for Alternative Combinations of Interest Rates and Contract Prices for a 2,400-space Operation

	Contract price ($/space)			
Interest rate (%)	$30	$35	$45	$55
4.5%	-$62.34	$20.31	$185.62	$350.93
5.5%	-$128.97	-$46.31	$118.99	$284.30
6.5%	-$198.19	-$115.54	$49.77	$215.08
8.5%	-$270.57	-$261.19	-$98.88	$69.43

Riverview Dairies Coming to North Dakota

- Hillsboro: 25,000 head (milking cows, no on-site heifers)
  - $180 million initial investment
  - 100 employees

- Wahpeton: 12,500 head (no on-site heifers)
  - $90 million initial investment
  - 45 employees

- Planned opening in 2027: 1 year for permitting; 2 years for construction

- No purchased cropland at either site (they will buy all feed)

- https://northdakotamonitor.com/2024/07/09/huge-dairy-farms-planned-for-eastern-north-dakota/

Table 1. Expected Feed Requirements by Ingredient for a Conventional Dairy that Produces an Average of 24,000 Pounds of Milk Per Cow per Year

	Lactatating cow diet		Dry cow diet		Total
Ingredient*	Quantity (lb/day)	Quantity (lb/cow/yr)	Quantity (lb/day)	Quantity (lb/cow/yr)	Quantity (lb/cow/yr)
Corn silage	40.25	12,357	17.25	1,001	13,357
Alfalfa baleage	17.25	5,296	0	0	5,296
Alfalfa hay	6.30	1,934	0	0	1,934
Grass hay	0.00	0	15.75	914	914
Corn, ground	11.33	3,478	3.09	179	3,658
Soybean meal	4.12	1,265	1.545	90	1,354
Dry distillers grain	3.09	949	0	0	949
Soybean hulls	2.06	632	2.06	119	752
Whole cotton seed	6.18	1,897	0	0	1,897
Minerals/vitamins	2.04	626	0.51	30	656

*Ingredients and quantities of ingredients were obtained from University of Missouri Extension. Found at: https://extension.missouri.edu/publications/g676 [accessed Aug. 25, 2024].

Quantity and Value of Feed Required by Feed Ingredient and Location of Dairy

Ingredient	Quantity Hillsboro (tons/year)	Quantity Wahpeton (tons/year)	Price* ($/ton)	Value Hillsboro ($/year)	Value Wahpeton ($/year)	Total value ($/year)
Corn silage	166,966	83,483	60	10,017,938	5,008,969	15,026,906
Alfalfa baleage	66,197	33,098	110	7,281,656	3,640,828	10,922,484
Alfalfa hay	24,176	12,088	250	6,044,063	3,022,031	9,066,094
Grass hay	11,419	5,709	90	1,027,688	513,844	1,541,531
Corn, ground	45,719	22,860	160	7,315,060	3,657,530	10,972,590
Soybean meal	16,931	8,465	325	5,502,453	2,751,227	8,253,680
Dry distillers grain	11,858	5,929	150	1,778,681	889,341	2,668,022
Soybean hulls	9,399	4,699	130	1,221,838	610,919	1,832,756
Whole cotton seed	23,716	11,858	375	8,893,406	4,446,703	13,340,109
Minerals/vitamins	8,198	4,099	1,000	8,198,250	4,099,125	12,297,375
Total	**-**	**-**	**-**	**57,281,032**	**28,640,516**	**85,921,548**

Other potential opportunities

- RV allows employees and neighbors to invest in dairy cows
- Manure = 907,989 tons/year; methane digesters at both locations
- N and P nutrients after digesting will be available for application to neighboring farms
- We are working to understand how many acres can be supplied by both dairies and how much of cost of synthetic N and P can be replaced on a $/acre basis.
- Community economic development (property taxes, income taxes, jobs, etc.)

Thank you!

Questions?