



UW Extension Holstein Steer Finishing Yardage Cost Survey

Written by: Bill Halfman, Adam Hady, Brenda Boetel, and David Kammel
Contributors: Hillary Bark and Amy Radunz



Bill Halfman, UW-Extension Agriculture Agent, Monroe County

Adam Hady, UW-Extension Agriculture Agent, Richland County

Brenda Boetel, UW-Extension Livestock and Grain Marketing Specialist and UW-River Falls Department of Ag Economics, River Falls

David Kammel, UW Biological Systems Engineering Extension Specialist, Madison

Contributors: Hillary Bark, former UW Madison Animal Science Summer Intern, and Amy Radunz, UW-River Falls Animal and Food Science, River Falls

Reviewer: **Gary Hachfeld**, Farm Business Management Educator, University of Minnesota Extension

© 2015 by Board of Regents of the University of Wisconsin System doing business as the Division of Cooperative Extension of the University of Wisconsin-Extension

An EEO/Affirmative Action employer, the University of Wisconsin Extension provides equal opportunities in employment and programming including Title IX and ADA requirements.

UW Extension Holstein Steer Finishing Yardage Cost Survey

The objective of this survey was to gather information on yardage costs of production for Wisconsin dairy steer feedlot enterprises. Information was obtained from feedlot operations feeding at least 50% dairy steers. The data collected was producer's annual costs for finishing dairy steers from at least 300 pounds or reported higher placement weights through finishing. This data was then used to calculate costs on a daily basis.

This Holstein steer yardage survey focused on overhead, labor/management, bedding, and direct expenses generally associated with yardage costs. It did not include feed, animal, and veterinarian/pharmaceutical related costs. This project was conducted by UW Extension and UW-River Falls and was partially funded with USDA Risk Management Agency grant funds.

Data was gathered by UW Extension Agriculture Agents from cooperating producers in 2012. There were 17 farm operations that had complete enough information to be included in the analysis.

Methods

Field data was collected by seven UW Extension Agriculture Agents and one summer intern using a general survey questionnaire to gather labor and bedding costs and use, and a spreadsheet that was adapted from the UW Extension Yardage Calculator (Hadley, Boetel and Halfman) to gather overhead data (cattle inventory, machinery, housing and facilities, feed storage, manure storage, etc.).

Labor and management data collected included paid and unpaid hours. Unpaid labor and management hours were hours of labor and management reported by the participants that they indicated as not paid a wage. Most of the unpaid labor and management were completed by the owner or their family, but we do not know that for sure. Wage rates were also collected from all cooperators who reported paid labor and management. For all unpaid hours of labor a wage rate of \$10 per hour was assigned. A wage rate of \$15 per hour was used for all unpaid management reported. A worksheet was prepared by Halfman that broke out tasks into daily, weekly, monthly, or less frequent tasks to help identify all the labor and management of the steer finishing operation.

Bedding data collected included type of bedding material(s) used, tonnage and cost. If farmers did not provide a cost/value due to using homegrown bedding, a standardized opportunity cost of \$30 per ton for soybean stubble, \$60 per ton for corn stalks and \$90 per ton for straw was used.

Machinery data collected was for machinery and equipment used directly in the cattle feeding enterprise, not for growing and harvesting feed. Farmers provided a percentage of time used in the cattle feeding enterprise for machinery and equipment that was used on several enterprises on the farm. Farmers were asked to provide model, size, age, estimated current market value, and years they intended to keep each piece of machinery. An ending/salvage value for the machinery and equipment, to determine straight-line depreciation, was determined using the "percentage of new list price" procedure outlined in the Iowa Ag Decision Maker Fact Sheet A3-29 Estimating Farm Machinery Costs (Appendix Table 1). New list prices for machinery and equipment were obtained from implement dealers in western Wisconsin. A five percent increase was added to annual depreciation to account for the cost of machine storage if the equipment was stored inside. Area implement dealers and *Hotline Farm Equipment Guide* were used to determine current market prices of items that the farmers were not sure of or did not provide current market values for.

Because of large variations in the age, design, and condition of buildings and facilities on surveyed operations, no single method of determining fixed costs for those items adequately fits all situations. In an effort to standardize determination of fixed costs for facilities across operations, a replacement value for feedlot, housing, feed bunks, cattle handling, and manure storage facilities was assigned using replacement values that were provided by Dr. David Kammel, UW Extension Agriculture and Bio-Systems Engineer (Appendix Table 2). Grain bin values were obtained from Steel Grain Bins from the Michigan Department of Treasury (Appendix Table 3). All facilities were assumed to have a 20 year useful life and straight line depreciation was applied using the replacement cost. The justification for this procedure is that for an operation to be sustainable, it must generate enough revenue to be able to replace items when they are worn out, or pay for them over their useful life. If an item no longer has a debt assigned to it, but still has a useful life a cost should be charged to it that can be applied to replacing it, once that time is determined by the owner.

A list of related expenses typically considered part of yardage costs was collected from cooperating farms. These included, but are not limited to taxes, insurance, utilities, fuel, repairs, custom hire, interest, permits, and marketing. The cooperators were asked to report the total for the entire operation and estimate what percent of each was incurred by the cattle finishing operation.

Cattle days on feed were determined by the cooperating farms describing how many head they had on hand and how many days they would be on site. Most operations reported that they typically had a consistent number of head at the farm all year. We used the reported daily average number of cattle in inventory multiplied by 365 days to determine cattle days for farms reporting always having cattle in inventory. For farms that reported having cattle in inventory less than all year long we used the number of days reported.

Overhead costs were calculated for each operation using the data collected as described above and the data was pooled to calculate ranges and averages.

Results

There were seventeen cooperating farms with adequate data to calculate yardage costs. These operations ranged in size from 34 head on feed to 1000 head on feed. The average number of head on feed was 178 and the median was 127 head on feed. This wide range is typical of the variability of feedlot enterprise size that we see in Wisconsin.

The average yardage cost including paid and unpaid labor/management and bedding for cooperating farms was \$0.96 per head per day. The median was \$0.85 per head per day. The range was \$0.47 per head per day to \$1.45 per head per day. Table 1 is an itemized list with the ranges of costs for the different areas used to calculate yardage.

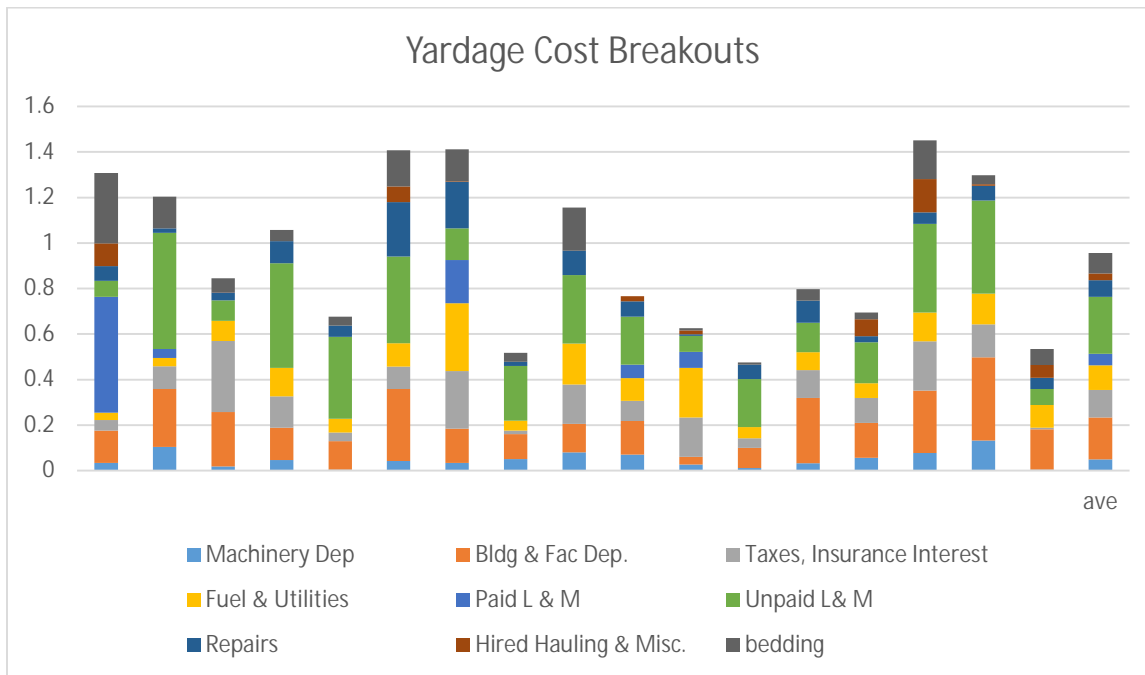
Table 1. Breakdown of Yardage Components (all costs in dollars per head per day)

Cost	Number of Farms Claiming	Low	High	Average	Median
Taxes	15	0.00	0.08	0.02	0.02
Insurance	all	0.00	0.10	0.03	0.03
Dues and Fees	9	0.00	0.07	0.01	0.00
Intermediate and long term interest	11	0.00	0.22	0.06	0.01
Fuel and Oil	all	0.01	0.23	0.09	0.07
Utilities	14	0.00	0.07	0.02	0.02
Paid Labor	5	0.00	0.51	0.05	0.00
Paid Management	1	0.00	0.02	0.00	0.00
Unpaid Labor	16	0.00	0.44	0.19	0.17
Unpaid Management	16	0.00	0.24	0.06	0.05
Machinery Repairs	16	0.00	0.20	0.04	0.03
Facility Repairs	15	0.00	0.18	0.03	0.02
Hired Cattle Hauling	7	0.00	0.15	0.02	0.00
Miscellaneous	3	0.00	0.07	0.01	0.00
Advertising	3	0.00	0.01	0.00	0.00
Machinery depreciation and lease	all	0.00	0.13	0.05	0.04
Building /Facility depreciation & lease	all	0.03	0.37	0.18	0.15
Bedding	16	0.00	0.25	0.08	0.09
Permits and Certifications	0				

Values in the table are rounded to the nearest cent

Chart 1 shows the yardage across the 17 farms in the survey. The costs are combined into the following similar groups; 1. Taxes, Insurance, Dues & fees, and Interest, 2. Fuel & oil and Utilities, 3. Paid labor and Management, 4. Unpaid labor and Management, 5. Machinery and Facility Repairs, 6. Hired Cattle Hauling, Miscellaneous, and Advertising. Machinery depreciation and leases, Building/ Facility depreciation and leases, and bedding are shown individually.

Chart 1. Yardage Costs Broken Out by Category



Summary

The average yardage of \$ 0.96 is more than most producers would expect. There was a wide range in variability in yardage costs across participants, which was not unexpected. This variability demonstrates the extreme importance that cattle finishers calculate their own costs and evaluate them for their strengths and areas where improvements can be made.

Acknowledgements:

The project leaders would like to thank the UW Extension Agriculture Agents who contacted cooperating farmers and collected the data, and the cooperating farmers who participated in this project.

Appendix

Appendix Table 1. Percentage Values used to Determine Salvage Values of Machinery adapted from Iowa Ag Decision Maker Fact Sheet A3-29 Estimating Farm Machinery Costs

Tractor <80HP		Tractor 80+HP		Pickup Truck		Other		Manure Spreader	
Age	% of New Similar Item	Age	% of New Similar Item	Age	% of New Similar Item	Age	% of New Similar Item	Age	% of New Similar Item
1	60	1	68	1	42	1	56	1	69
2	54	2	61	2	39	2	50	2	62
3	50	3	57	3	36	3	46	3	56
4	46	4	53	4	34	4	42	4	52
5	43	5	49	5	33	5	39	5	48
6	41	6	46	6	31	6	37	6	45
7	38	7	44	7	30	7	34	7	42
8	36	8	41	8	29	8	32	8	40
9	34	9	39	9	27	9	30	9	37
10	33	10	37	10	26	10	28	10	35
11	31	11	35	11	25	11	27	11	33
12	29	12	33	12	24	12	25	12	31
13	28	13	32	13	24	13	24	13	29
14	27	14	30	14	23	14	22	14	28
15	25	15	29	15	22	15	21	15	26
16	24	16	28	16	21	16	20	16	25
17	23	17	26	17	20	17	19	17	24
18	22	18	25	18	20	18	18	18	22
19	21	19	24	19	19	19	17	19	21
20	20	20	23	20	19	20	16	20	20
21	19	21	22	21	18	21	15	21	19
22	18	22	21	22	17	22	14	22	18
23	17	23	20	23	16	23	13	23	17
24	16	24	19	24	15	24	12	24	16
25	15	25	18	25	14	25	11	25	15
26	14	26	17	26	13	26	10	26	14
27	13	27	16	27	12	27	9	27	13
28	12	28	15	28	11	28	8	28	12
29	11	29	14	29	10	29	7	29	11
30	10	30	13	30	9	30	6	30	10
31	9	31	12	31	8	31	5	31	9
32	8	32	11	32	7	32	4	32	8
33	7	33	10	33	6	33	3	33	7
34	6	34	9	34	5	34	3	34	6
35	5	35	8	35	4	35	3	35	5
36	4	36	7	36	3	36	3	36	4
37	3	37	6	37	2	37	3	37	3
38	3	38	5	38	1	38	3	38	2
39	3	39	4	39	0	39	3	39	2
40	3	40	3	40	0	40	3	40	2

Other Column would include machinery like TMR mixers, feed grinders, skid loaders etc. To determine the salvage value of an item, the value of a brand new like item was multiplied by the percentage shown by age of the current item at its time of replacement.

Appendix Table 2. Building and Facility Cost Estimates Used, by Dr. David Kammel, UW Extension Bio-Systems Engineer

s.f = square foot, l.f. = linear foot, and c.f. = cubic foot

Outside Lots (exercise lots)	Quantity	Unit	Cost				
Pasture		s.f	Cost reflected in fence cost				
Dirt lot		s.f	Cost reflected in fence cost				
Concrete lot		s.f	\$2.75				
Waterers							
Heated and insulated		each					
2'		each	\$500.00				
3'		each	\$700.00				
4'		each	\$800.00				
6'		each	\$900.00				
7'		each	\$1,100.00				
Energy free water							
2 hole		each	\$700.00				
4 hole		each	\$900.00				
Plastic water tank							
50 gallon		each	\$100.00				
100 gallon		each	\$125.00				
300 gallon plastic		each	\$200.00				
600 gallon plastic		each	\$300.00				
http://www.barnworld.com/sa/c/Stock_Tanks.htm							
http://www.livestockshed.com/livestock_feeders.html							
Feeding Systems							
Concrete H bunk		l.f.	\$25.00				
Concrete J bunk		l.f.	\$25.00				
3 ft flat floor platform with 21 in curb and posts 10 ft on center with rail							
With post and rail feeder barrier		l.f.	\$30.00				
With diagonal bar feeder barrier		l.f.	\$36.00				
Mechanical bunk feeder		l.f.	\$100.00				
Mechanical conveyor		l.f.	\$75.00				
Slant bar feeder wagon		l.f.	\$275.00				
Feeder wagon on running gear, feed on both sides		l.f.	\$140.00				
Steel feed bunk portable, feed both sides		l.f.	\$50.00				
Poly feed bunk portable, feed both sides		l.f.	\$20.00				

Appendix Table 2 continued

Round bale feeder		each	\$400.00				
Steer Stuffers:							
65 bushel 50 head		each	\$1,500.00				
100 bushel 50 head		each	\$1,700.00				
150 bushel 75 head		each	\$2,300.00				
Sources: http://www.barnworld.com/sa/c/Stock_Tanks.htm							
http://www.livestockshed.com/livestock_feeders.html							
http://www.zabequipment.com/conveyor-1600.html							
Cattle Handling							
Hydraulic chute with headgate		each	\$15,000.00				
Squeeze chute restraint with headgate		each	\$5,000.00				
Self-catch headgate, mechanical		each	\$1,500.00				
Scissors headgate		each	\$900.00				
Palpation cage		each	\$900.00				
Portable loading chute		each	\$5,700.00				
Crowding tub 180 degree		each	\$2,700.00				
Scale, 2400 lb capacity		each	\$5,000				
Working alley, 2 panels/sides		l.f.	\$60.00				
50" high 2" pipe Fence panels		l.f.	\$15.00				
Corral panels		l.f.	\$20.00				
Holding pen, 10' x 10'		s.f.	\$28.00				
Sources: http://www.beavervalleysupply.com/sectionj/begates.htm							
http://www.livestockshed.com/livestock_feeders.html							
Shelter							
Shade shelter pipe frame							
20' x 20'		each	\$1,200.00				
40'x40'		each	\$3,300.00				
60'x60'		each	\$6,500.00				
100 x 100'		each	\$14,100.00				
200' x200'		each	\$49,000.00				
Shade cloth, 16' roll		s.f.	\$0.22				
Shade cloth panels, hemmed grommetted		s.f.	\$0.40				
Source: http://www.farmtek.com/farm/supplies//ProductDisplay?catalogId=10052&storeId=10001&langId=-1&division=FarmTek&productId=13392							

Appendix Table 2 continued

Windbreak shelter pipe frame 10' high		l.f.	\$20.00				
Hoop barn /no floor		s.f.	\$6.00				
Hoop barn materials only/no floor		s.f.	\$4.00				
Add concrete floor under shelter		s.f.	\$2.75				
Post frame roof open front/no floor		s.f.	\$9.00				
Steel frame roof open front/no floor		s.f.	\$12.00				
Post frame total confinement		s.f.	\$20.00				
Two story barn basement		s.f.	\$5.00*	estimate			
Two Story Mow Space		s.f.	\$5.00*	*Pro-rated value for old			
				dairy barns			
Manure Storage							
Concrete stacking pad with buck wall		s.f.	\$3.50				
Slatted floor tank under shelter		c.f.	\$1.50	\$0.20	/gal	gallon = c.f. x 7.5	
Concrete vertical wall tank		c.f.	\$0.90	\$0.12	/gal		
Clay lined lagoon		c.f.	\$0.25	\$0.03	/gal		
Concrete line lagoon		c.f.	\$0.50	\$0.07	/gal		
Runoff Control							
Vegetative treatment area		acre	\$1,000.00				
Feed storage							
Horizontal silo concrete walls		c.f.	\$0.52				
Vertical silo		c.f.	\$1.40				
Concrete feed storage pad		s.f.	\$2.75				
Asphalt feed storage pad		s.f.	\$2.30				
Bulk feed bin							
3 ton		each	\$1,200.00				
6 ton		each	\$1,500.00				
9 ton		each	\$2,200.00				
12 ton		each	\$3,000.00				
Hay storage							
Post frame shelter no floor		s.f.	\$9.00				
Hoop shelter no floor		s.f.	\$5.00				
Hoop shelter materials only		s.f.	\$3.00				

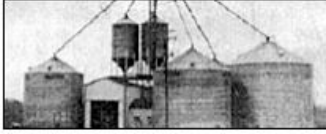
Appendix Table 2 continued

Fencing no labor costs				2011 adjusted costs			
Woven wire		I.f.	\$1.07	\$1.23			
Barb wire 5 strands		I.f.	\$0.82	\$0.94			
+/- 1 strand		I.f.	0.04	\$0.05			
HT wire 8 strands		I.f.	\$0.79	\$0.91			
+/- 1 strand		I.f.	\$0.02	\$0.02			
HT electric 5 strand		I.f.	\$0.52	\$0.60			
+/- 1 strand		I.f.	\$0.02	\$0.02			
Polywire electric 1 strand		I.f.	\$0.16	\$0.18			
+/- 1 strand		I.f.	\$0.03	\$0.03			
Polytape		I.f.	\$0.21	\$0.24			
Source: IA state							
Estimated costs for livestock fencing 2005 costs							

Appendix Table 3

STEEL GRAIN BINS

STANDARD BINS: Costs are averages for utility-type storage bins usually found on farms and ranches. Costs of standard bins are for tank with door and manhole, erected on the buyer's slab. Height is to top of shell. Cost of ventilated floor includes floor, auger tube, and steel columns and beam supports of plenum assembly.



ADJUSTMENTS:

Ladders: \$48.75 plus \$6.90 per linear foot
 For safety cages, add: \$13.25 to \$16.75 per linear foot installed
 Auger and drive: \$255.00 plus \$25.00 to \$30.50 per foot of bin diameter
 For small feed tanks, use \$75.00 to \$90.00 per foot. Add \$3,575 for scale.
 For spreaders, add: \$500.00 to \$750.00
 For stirrators, add: \$130 to \$200 per foot of bin diameter

DIAMETER (Feet)	HEIGHT (Feet)	CAPACITY (Bushels)	COST WITHOUT FLOOR	ADD FOR			
				CONCRETE FLOOR	STEEL FLOOR	VENTILATED FLOOR	FAN AND HEAT
15	8	1,125	\$ 3,150	\$ 450	\$ 330	\$ 1,175	\$2,400
	13	1,850	4,575	475	330	1,175	2,400
	16	2,275	4,975	575	330	1,175	2,400
18	11	2,250	4,600	600	440	1,600	2,550
	13	2,650	5,150	600	440	1,600	2,550
	16	3,275	5,725	625	440	1,600	2,550
21	21	4,300	7,650	675	440	1,600	2,550
	13	3,625	5,375	850	590	2,150	2,650
	16	4,450	6,075	850	590	2,150	2,650
24	24	6,675	10,000	950	590	2,150	2,650
	16	5,825	6,625	1,100	735	2,750	2,725
	19	6,900	8,475	1,125	735	2,750	2,725
27	24	8,725	11,475	1,225	735	2,750	2,725
	32	11,625	14,775	1,300	735	2,750	2,725
	19	8,750	10,300	1,475	910	3,475	2,850
30	24	11,025	14,025	1,575	910	3,475	2,850
	32	14,725	17,575	1,675	910	3,475	2,850
	19	10,775	11,525	1,650	1,130	4,250	2,950
33	24	13,625	16,000	1,775	1,130	4,250	2,950
	32	18,175	20,100	1,975	1,130	4,250	2,950
	24	16,475	17,725	2,050	1,320	5,100	3,025
36	27	18,550	20,050	2,100	1,320	5,100	3,025
	32	21,975	24,950	2,550	1,320	5,100	3,025
	24	19,625	21,575	2,575	1,540	6,000	3,025
42	27	22,075	23,475	2,675	1,540	6,000	3,075
	32	26,150	26,100	2,775	1,540	6,000	3,075
	40	32,700	28,925	2,950	1,540	6,000	3,075
48	27	30,050	28,450	3,650	2,065	8,100	3,225
	32	35,600	32,525	3,875	2,065	8,100	3,225
	40	44,500	39,650	4,075	2,065	8,100	3,225
48	48	53,425	47,200	4,400	2,065	8,100	3,225
	27	39,250	41,150	4,775	2,640	10,450	3,350
	32	46,500	48,900	5,050	2,640	10,450	3,350
48	40	58,150	55,000	5,300	2,640	10,450	3,350
	48	69,775	61,650	5,750	2,640	10,450	3,350

Source: Michigan Department of Treasury, 2003