



Economics of Animal Identification

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Economics of Animal ID

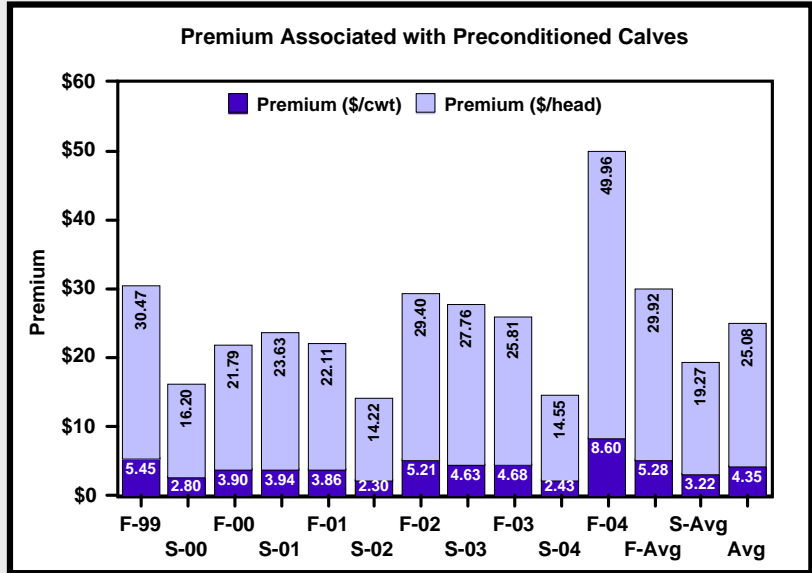
Increased revenue
(decreased costs)

vs.

Increased costs
(decreased revenue)



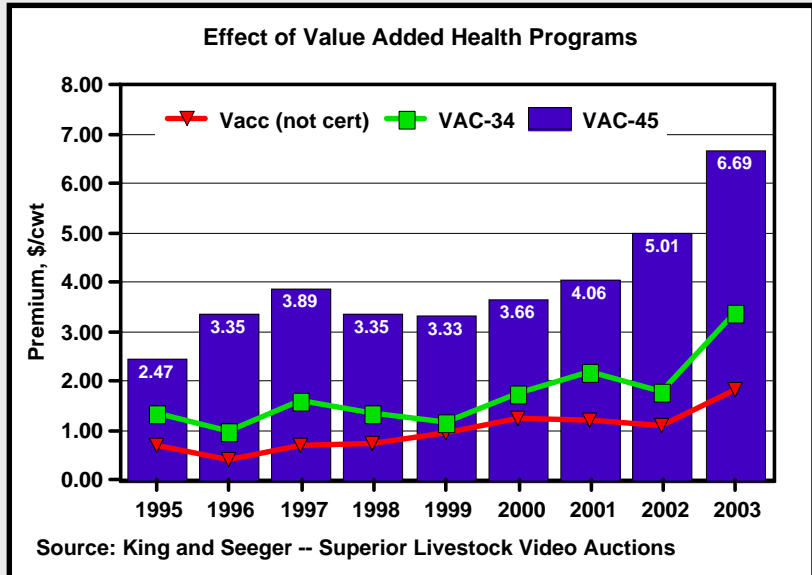
Increased returns -- Preconditioning premium



Source: Holton Livestock Exchange LMA Preconditioned Sale



Increased returns -- Preconditioning premium



Source: King and Seeger -- Superior Livestock Video Auctions



- **The increased revenue associated with animal identification is very difficult to quantify – estimated returns to preconditioning calves for cow-calf producer of \$12-\$15/head.**
- **Estimating costs is a little easier and this allows a producer to determine “what is needed” to breakeven.**



Increased costs...

Hardware Selection

Choice of hardware will depend upon ...

- **Intended activity**
 - Alley way to trucks, sale ring, etc.
 - Chuteside
- **Volume**
 - Number of head per year
 - Throughput (processing capacity)
- **Labor**
 - Availability (quantity)
 - Skill level (quality)





Increased costs...

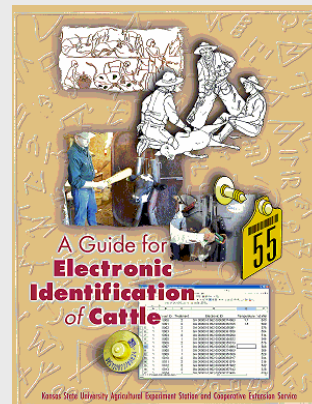
Estimating the Cost of RFID

- The cost of implementing an RFID system will depend on the level of complexity (completeness of the system) that is desired, which will be a function of your objective(s).
- Objectives:
 - Compliance (assuming mandatory program)
 - Minimal amount of data are required
 - Compliance + Management
 - Data → Analysis → Decision-making



Estimating the Cost of RFID

- Discussion and approach of cost estimation is going to follow the method outlined in *A Guide for Electronic Identification of Cattle*.
- Approach is incorporated into *RFID costs.xls* spreadsheet.





Economic principles ...

- Variable vs. fixed costs
 - Technology will not be scale neutral
- Multiyear investments vs. annual purchases
 - Annual costs are relevant (dep & int)
- Allocating/prorating costs to RFID system
- Pre-tax vs. after-tax analysis



Variable vs. fixed costs ...

- Variable costs are those costs that are directly related to number of head in the herd (e.g., eID tag, possibly data analysis).
- Fixed costs are those costs associated with the various components (e.g., hardware, software, management, etc) that are constant regardless of the number of animals.



Fixed vs. variable costs ...

- Variable costs will generally be relatively consistent across operations (with the exception of volume discounts that may be available).
- Fixed costs often vary considerably between operations due to economies of size that exist (i.e., spreading fixed costs over most units).



Multi-year investments vs. annual purchases ...

- Some components of RFID system will have a useful life of more than one year (e.g., reader, data accumulator, eID tag for cows).
- Some components of an RFID system represent annual purchases (e.g., eID tag for calves, subscriptions, internet access).
- When considering the cost of an RFID system, the relevant cost is the annualized cost.



Multi-year investments vs. annual purchases ...

- The annualized cost of multiyear investments is a function of the useful life of the component (depreciation) and the cost of money (interest).
- Depreciation reflects the cost associated with the equipment wearing out (either physically or due to obsolescence).
- Interest reflects the cost of money tied up in RFID components.



Allocating costs to RFID system ...

- Likely some of the costs associated with an RFID system will not be used exclusively for RFID. Thus, it is important to allocate costs accordingly.
- Percent of costs to allocate to RFID system will be obvious for some components (e.g., eID tag, reader), but less so for others (e.g., desktop computer, internet access, labor).



Using RFID costs.xls ...

- Excel spreadsheet that allows user to estimate the cost of an RFID system.
- Inputs required:
 - Size of herd
 - Various components considering
 - Cost (per head and/or fixed amount)
 - Useful life and salvage value
 - Percent to allocate to RFID
 - Interest rate

Microsoft Excel - RFID costs (ASI 661 2005).xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

Type a question for help

102%

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RFID Cost.xls ----- A spreadsheet to estimate the economic costs of a radio frequency identification (RFID) system.
Version -- 11.26.03 [Print information](#)

DESCRIPTION OF "SHEETS" (see tabs at bottom of screen)
Intro - brief instructions for using spreadsheet and author contact information.
RFID components - basic information about the various components of a RFID system.
RFID costs - user inputs to estimate operation-specific RFID system costs.

INPUTS vs CALCULATED VALUES
In the "RFID costs" tab blue shaded cells represent inputs that need to be entered by the user and all black numbers are calculated from these inputs. If not all input cells are needed, they should be left blank.

DESCRIPTION OF INPUTS
Several inputs required have a red diamond in the upper right hand corner of the cell. By moving your mouse cursor over this diamond, a brief description of the input will be displayed on the screen.

RELATED PUBLICATION
For a more detailed discussion of RFID systems see **A Guide for Electronic Identification of Cattle**, an order form for this publication can be found at

RFID Cost.xls was developed by:

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A Guide for Electronic Identification of Cattle

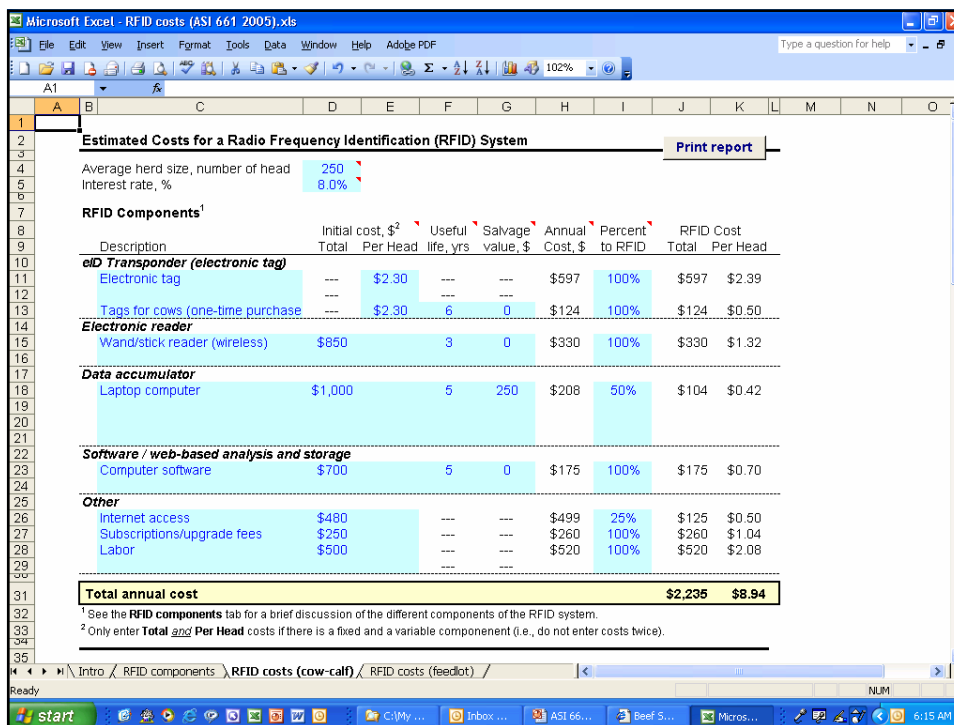
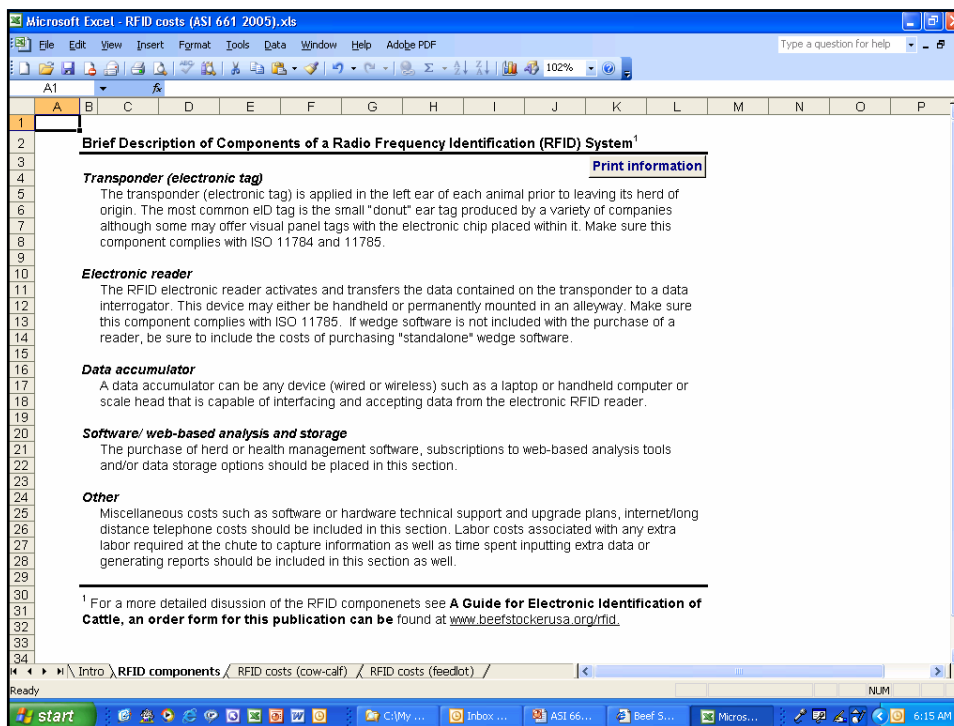
Ready

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C:\My... Inbox... ASI 66... Beef S... Micros...

NLM

6:14 AM



Microsoft Excel - RFID costs (ASI 661 2005).xls

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Type a question for help

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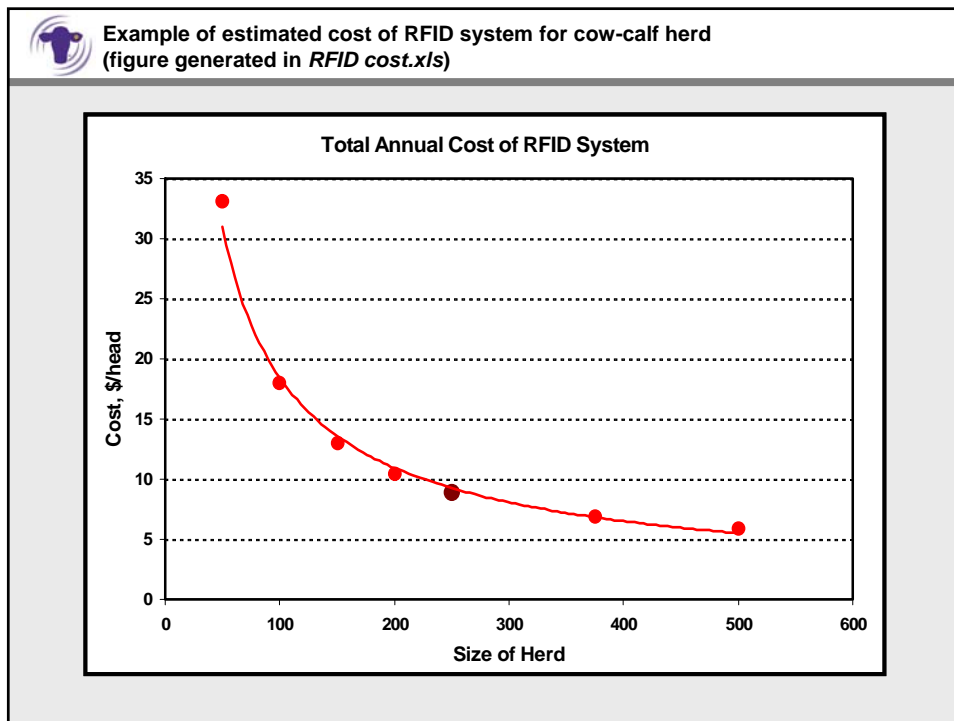
Total Annual RFID System Cost, \$/head

RFID Components	Base	Size of Herd, percent of base						
		20%	40%	60%	80%	100%	150%	200%
Description	250	50	100	150	200	250	375	500
RFID Transponder (tag)								
Electronic tag	\$2.39	\$2.39	\$2.39	\$2.39	\$2.39	\$2.39	\$2.39	\$2.39
Tags for cows (one-time purchase)	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50
Electronic reader								
Wand/stick reader (wireless)	\$1.32	\$6.60	\$3.30	\$2.20	\$1.65	\$1.32	\$0.88	\$0.66
Data accumulator								
Laptop computer	\$0.42	\$2.08	\$1.04	\$0.69	\$0.52	\$0.42	\$0.28	\$0.21
Software/ web-based analysis and storage								
Computer software	\$0.70	\$3.51	\$1.75	\$1.17	\$0.88	\$0.70	\$0.47	\$0.35
Other								
Internet access	\$0.50	\$2.50	\$1.25	\$0.83	\$0.62	\$0.50	\$0.33	\$0.25
Subscriptions/upgrade fees	\$1.04	\$5.20	\$2.60	\$1.73	\$1.30	\$1.04	\$0.69	\$0.52
Labor	\$2.08	\$10.40	\$5.20	\$3.47	\$2.60	\$2.08	\$1.39	\$1.04
Total annual cost	\$8.94	\$33.16	\$18.02	\$12.98	\$10.45	\$8.94	\$6.92	\$5.91

Intro \ RFID components \ RFID costs (cow-calf) \ RFID costs (feedlot)

Ready

start



Microsoft Excel - RFID costs (ASI 661 2005).xls

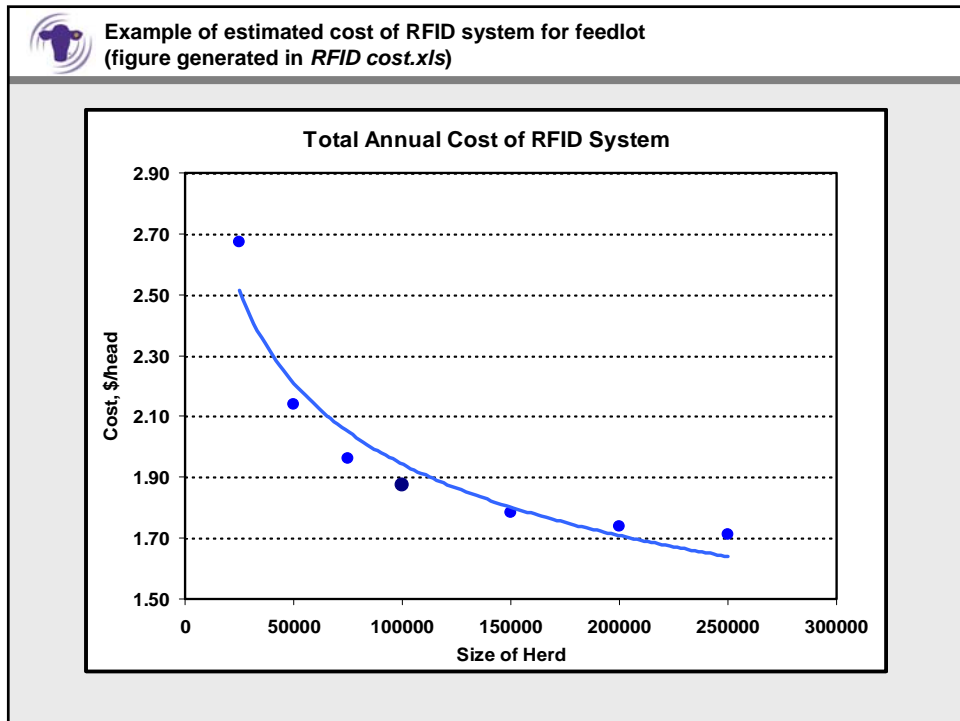
Estimated Costs for a Radio Frequency Identification (RFID) System Print report

Average herd size, number of head: 100,000
Interest rate, %: 8.0%

RFID Components¹

Description	Initial cost, \$ ²		Useful life, yrs	Salvage value, \$	Annual Cost, \$	Percent to RFID	RFID Cost	
	Total	Per Head					Total	Per Head
RFID Transponder (electronic tag)								
Electronic tag	---	\$0.05	---	---	\$4,680	100%	\$4,680	\$0.05
Electronic reader								
Wand/stick readers (4)	\$3,400	---	3	0	\$1,319	100%	\$1,319	\$0.01
Stationary reader (2)	\$7,000	---	3	---	\$2,716	100%	\$2,716	\$0.03
Data accumulator								
Scale head	\$2,500	---	3	0	\$970	100%	\$970	\$0.01
Laptop computer	\$1,000	---	5	0	\$250	100%	\$250	\$0.00
Desktop computer	\$800	---	3	0	\$310	100%	\$310	\$0.00
Software / web-based analysis and storage								
Computer software	\$1,000	---	5	0	\$250	100%	\$250	\$0.00
Other								
Internet access	\$480	---	---	---	\$499	0%	\$0	\$0.00
Subscriptions/upgrade fees	---	\$1.50	---	---	\$156,000	100%	\$156,000	\$1.56
Labor	\$40,000	---	---	---	\$41,600	50%	\$20,800	\$0.21
Total annual cost							\$187,297	\$1.87

¹ See the RFID components tab for a brief discussion of the different components of the RFID system.
² Only enter Total and Per Head costs if there is a fixed and a variable component (i.e., do not enter costs twice).





Where can I find cost information?

- Beef Stocker USA 2004 Survey of the Animal Identification Industry (varying levels of information from 37 companies – www.beefstockerusa.org).
- Web searches (e.g., www.google.com), service providers, input suppliers, and commodity organizations.
- Rapidly developing market so keep in mind that information becomes dated quickly.



Can You Justify an RFID System?

- If ID becomes mandatory, the answer for most producers will be *YES*.
- However, the type of RFID system used will depend on the goals and objectives of the producer and his/her record-keeping ability.
- Whether or not an RFID system that exceeds the minimum required for compliance can be justified will depend on how data will be used.



Alternative Considerations...

- Do the minimum required by law myself
- Hire somebody to make sure I'm in compliance
- Develop a "compliance plus" system for collecting, analyzing, and storing data
 - Do everything myself (i.e., in-house)
 - Do several parts in-house and contract out for others
 - Hire somebody for most all aspects of RFID system
- Bottom line, there will be service providers willing to do as much or little as desired (for a fee).




Alternative Considerations...

- Producers will have choices!
- RFID systems will range from the simple to the complex.

DATE: _____ RANCH: _____
 GROUP INFO BEING COMBINED WITH BELOW? Yes No
 VISUAL TAG #: _____ SEX: HEIFER COW STEER BULL
 Check all that apply: BRAND METHOD DOSE

<input type="checkbox"/> BRUCELLOSIS	_____	_____
<input type="checkbox"/> CLOSTRIDIAL	_____	_____
<input type="checkbox"/> IHR	_____	_____
<input type="checkbox"/> PI-3	_____	_____
<input type="checkbox"/> BVD	_____	_____
<input type="checkbox"/> BRSV	_____	_____
<input type="checkbox"/> HAEMOPHILUS SOMNUS BACTERIN	_____	_____
<input type="checkbox"/> PASTERURELLA	_____	_____
<input type="checkbox"/> LEPTOSPIROSIS	_____	_____
<input type="checkbox"/> DEWORM	_____	_____




Premium Cattle Supply Network

Harvest Date: 5/11/0001

Owner: _____
 Weanlot #: 700
 Lot #: 1113
 Total Animals: 210

Plant Location: RIVERBEND PLAINS Ck YD Base Price: 120.81
 Avg Dress %: 63.60 Ck Set Spread: -2.17
 Foot Dressed: 122.51 Nebraska Base Price: 119.97

	Hot Carcass Weight	RFA Adjustment	Fat Thickness							
4500	1	0.46%	-0.60	23	10.95%	-0.1	0	0.00%		
500 000	4	1.90%	0.40	0.00	19	9.00%	0.18	0	0.00%	
600 000	22	15.45%	0.30	0.00	32	15.24%	0.2	0.2	18.48%	
650 000	45	21.42%	0.10	0.00	36	16.10%	0.3	0.4	86.19%	
700 700	62	29.62%	0.00	0.15	26	12.20%	0.6	0.2	2.80%	
750 000	47	22.30%	0.0	12	5.71%	0.5	0.6	0	0.00%	
800 000	22	10.46%	0.00	15	10.50%	0.6	0.7	0	0.00%	
850 000	5	2.35%	0.15	0.38	13	6.19%	0.7	0.8	0	0.00%
900 900	1	0.46%	0.30	0.45	10	4.70%	0.6	0.9	0	0.00%
+950	0	0.00%	0.0	0.00	0	0.00%	0.5	0.8	0	0.00%
			-0.6	1	0.46%		+1.8	0	0.00%	



Summary...

- RFID systems do require capital outlay and increase operating costs.
- If this technology is used only for compliance purposes, the beef industry most likely will lose market share and be worse off.
- If this technology is used to lower the relative cost of production of beef through better management, the beef industry will benefit.
- EOS associated with this technology will provide opportunities/challenges for Extension



Questions ???



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