



# APHIS Appraisal Using Beef and Dairy Calculators

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# Presentation Roadmap

- Appraisal Concepts
- Appraisal Calculators
  - ☐ Beef
    - ❖ Breeders
    - ❖ Feeders
  - ☐ Dairy
    - ❖ Milk Cows
    - ❖ Replacements



# What is an Appraisal?

- An appraisal is a determination of an asset's value based on supporting facts.
- Appraisal is a two part process
  - ❑ Evaluation of quality
  - ❑ Estimation of fair market value based upon assessed quality



# Determining Fair Market Value

- Most common appraisal approach is sales comparison
  - ❑ Sale prices of animals similar to the subject animal are used to estimate value
  - ❑ Often livestock auction prices are used
    - ❖ Relevant auctions that specialize in selling breeding—milking animals



# Why Appraisal Calculators

- No need for private appraisers
  - ❑ Save cost of their hire
  - ❑ Rarely provided additional market information
  - ❑ Often lack of transparency in appraisal reports
- Simplicity and speed of appraisal
- Fair and consistent treatment to all producers
- Success with calculators in other APHIS livestock disease programs



# Beef Calculators



# Initial Development

- Beef calculators were developed in collaboration with Livestock Marketing Information Center (LMIC)

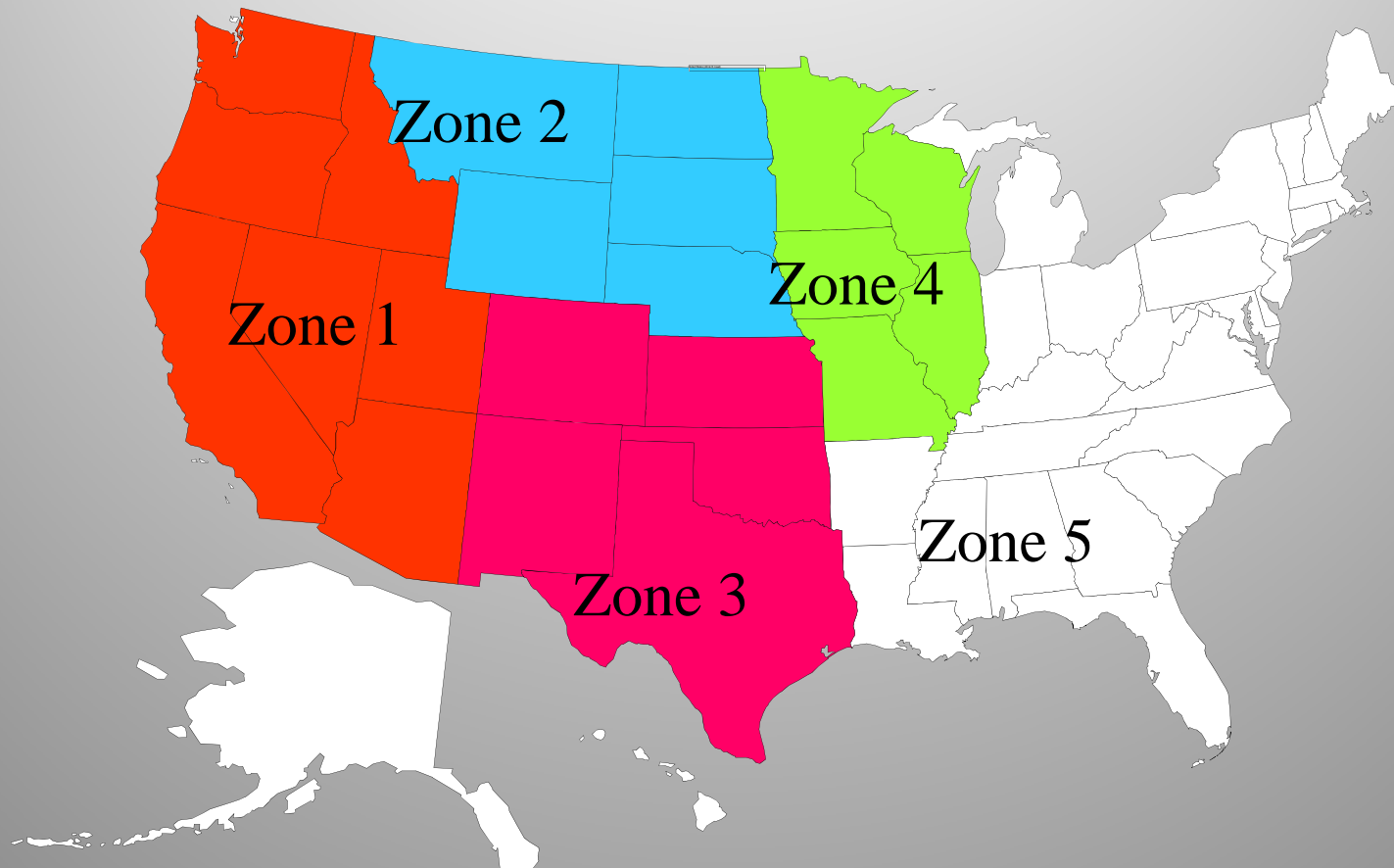
- Members are extension livestock marketing economists located in land grant universities across the country



**LMIC**  
Livestock Marketing  
Information Center

- Objective: minimal data input to determine value of the majority of beef cow herds and young stock

# Breeding Calculator Has 5 Zones





# Breeding Animals

- Base price: AMS' cutter grade cull cow
- Bred cow as percentage of cull cow value depends upon cow inventory: 116% if contracting, 122% if stable, 129% if expanding
- Cow-Calf Pair Value: 129% of bred cow value
- Bred Heifer Value:  
111% of bred cow value
- Premiums for registered and seedstock herds



# Breeding Animal Quality Adjustments

- Age: premium <4 yrs old, discount >7 yrs old
- Weight: discount if 100 lbs <base weight, premium if 150 lbs >base weight
- Quality: premium for above average quality, discount for below average quality
- Calf age: discount <2 months, premium >5 months



# Beef Breeding Calculator Input

BASE MARKET VALUE, PREVIOUS 4 WEEKS

USDA-AMS LM\_CT168

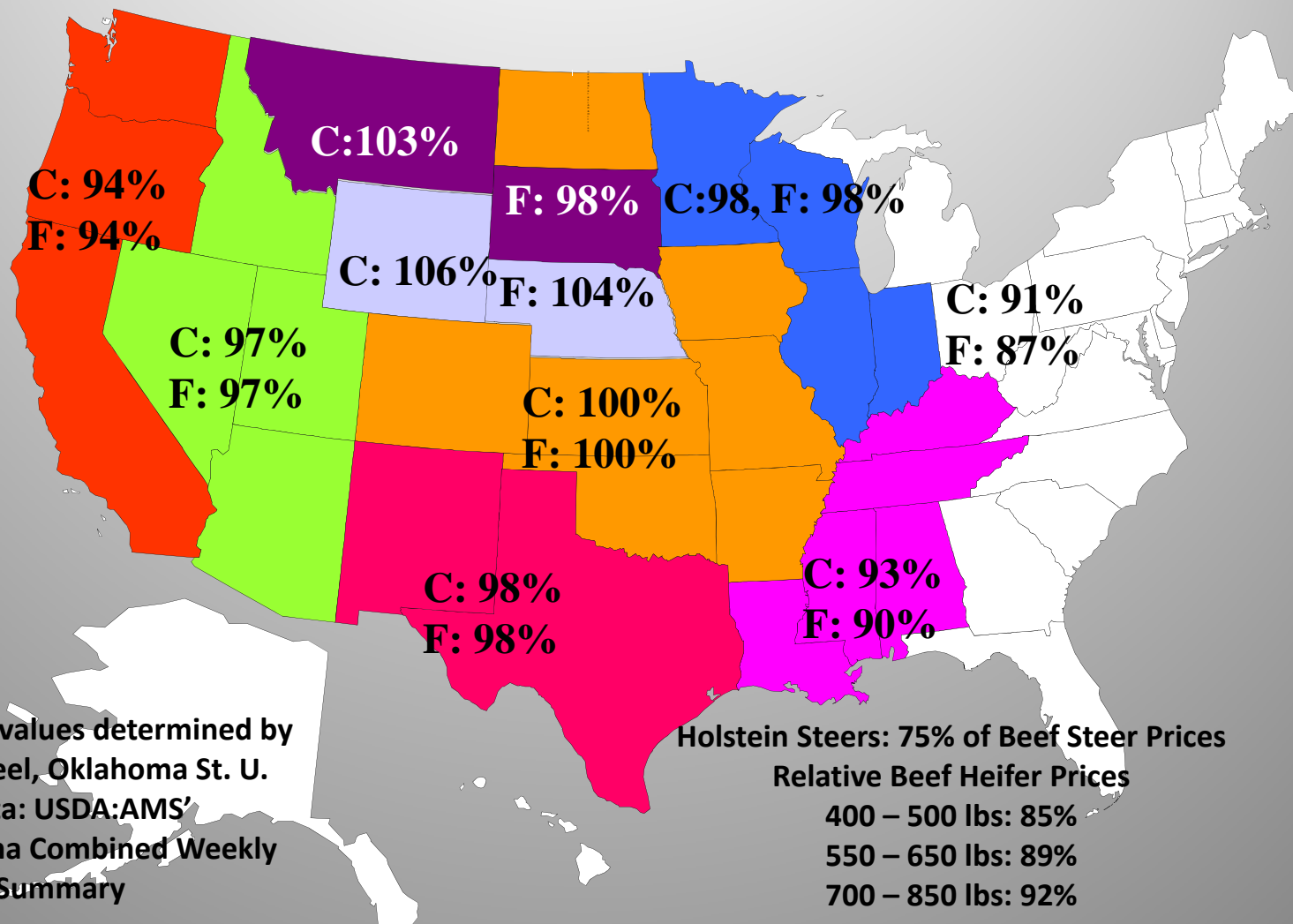
NATIONAL DRESSED CUTTER (90% LEAN), 500 POUNDS AND UP

	WT	PRICE	VALUE
WEEK T	575	\$125.00	\$719
WEEK T-1	570	\$130.00	\$741
WEEK T-2	570	\$135.00	\$770
WEEK T-3	575	\$140.00	\$805
AVG.	573	\$132.50	
LIVE WT	1301		
CULL COW BASE VALUE PER HEAD			\$759

# Example Appraisal Table: Bred Cows

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
<b>Bred Cows</b>					
minimum base age (yrs)	4	4	4	4	4
maximum base age (yrs)	7	7	7	7	7
minimum base weight (lbs)	1147	1149	1149	1164	1160
maximum base weight (lbs)	1397	1399	1399	1414	1410
base quality grade	average	average	average	average	average
base value (\$/head)	\$915.29	\$936.53	\$948.53	\$923.48	\$917.95
adjustments to base (\$/head)					
< 4 years of age	\$54.92	\$56.19	\$56.91	\$55.41	\$55.08
> 7 years of age	-\$100.68	-\$103.02	-\$104.34	-\$101.58	-\$100.97
less than minimum weight	-\$27.46	-\$28.10	-\$28.46	-\$27.70	-\$27.54
more than maximum weight	\$23.61	\$24.16	\$24.47	\$23.83	\$23.68
low or poor quality	-\$109.83	-\$112.38	-\$113.82	-\$110.82	-\$110.15
fancy or high quality	\$137.29	\$140.48	\$142.28	\$138.52	\$137.69

# Beef Calf (C) & Feeder (F) Prices Relative to those of Oklahoma



Relative values determined by Darrel Peel, Oklahoma St. U.  
Price data: USDA:AMS' Oklahoma Combined Weekly Auction Summary

Holstein Steers: 75% of Beef Steer Prices  
Relative Beef Heifer Prices  
400 – 500 lbs: 85%  
550 – 650 lbs: 89%  
700 – 850 lbs: 92%

# Example: Feeder Steer Prices

## Steers (\$/cwt)

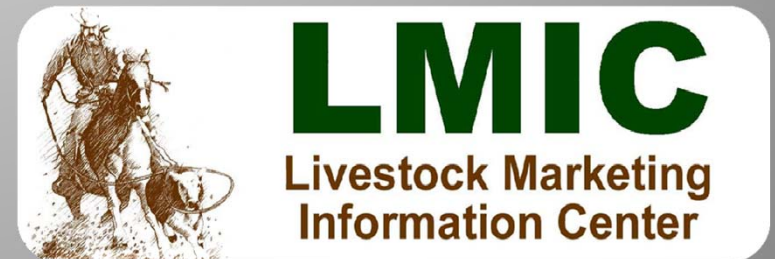
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9
Weight (lbs)									
400	\$135.15	\$139.46	\$152.40	\$148.09	\$143.77	\$140.90	\$140.90	\$133.71	\$130.83
450	\$131.15	\$135.33	\$147.89	\$143.70	\$139.52	\$136.73	\$136.73	\$129.75	\$126.96
500	\$128.41	\$132.51	\$144.81	\$140.71	\$136.61	\$133.88	\$133.88	\$127.05	\$124.32
550	\$127.84	\$131.92	\$144.16	\$140.08	\$136.00	\$133.28	\$133.28	\$126.48	\$123.76
600	\$128.19	\$132.28	\$144.55	\$140.46	\$136.37	\$133.64	\$133.64	\$126.82	\$124.10
650	\$128.37	\$132.47	\$142.03	\$133.84	\$136.57	\$133.84	\$133.84	\$122.91	\$118.81
700	\$127.07	\$131.13	\$140.59	\$132.48	\$135.18	\$132.48	\$132.48	\$121.66	\$117.61
750	\$125.20	\$129.20	\$138.52	\$130.53	\$133.20	\$130.53	\$130.53	\$119.88	\$115.88
800	\$122.82	\$126.74	\$135.89	\$128.05	\$130.66	\$128.05	\$128.05	\$117.60	\$113.68
850	\$120.30	\$124.14	\$133.10	\$125.42	\$127.98	\$125.42	\$125.42	\$115.18	\$111.34
900	\$117.06	\$120.80	\$129.52	\$122.05	\$124.54	\$122.05	\$122.05	\$112.08	\$108.35

# Dairy Calculators



# Milk Cow Calculator

- Has been in use for several years
  - ❑ Three major revisions, plus minor adjustments
  - ❑ Last major revision: October, 2011
- Also developed with assistance from LMIC and reviewed by LMIC





# Milk Cow Calculator

- Cow value function of
  - ❑ Future milk production premium
  - ❑ Future calf production premium
  - ❑ Meat (cull) value
    - ❖ Prices function of weight and quality



# Milk Production Premium

## ➤ Future Milk Production

- ❑ Expected remaining lactations (DHI survivability study)
- ❑ 305 ME milk production
  - ❖ Calculator can determine: daily production, DIM, butterfat
- ❑ Adjustment for butterfat price impact

## ➤ Multiplied by cow-value per pound of milk

- ❑ NASS cow replacement price (23 states)
- ❑ Freshened springer heifer
  - ❖ Expected remaining lactations
  - ❖ Value of expected calves to be born
- ❑ NASS state-level milk production per cow
- ❑ AMS' cull cow price

# Calf Production Premium

- Expected number of calves a function of expected number of remaining lactations
- Multiplied by new-born calf price results in expected value of future calf production
- Calf price is adjusted by relative calf value
  - ❑ Default is 100%
  - ❑ >100% is reserved for those producers who have a track record of selling replacement animals that bring a premium above average prices
    - ❖ Must be documented
    - ❖ Also adjusted for proportion of calf crop ultimately sold



# Example: Appraisal Cow Value Using Default Parameters

## Calculator Default Parameter Values

<b>cow breed</b>	<b>Holstein</b>
<b>lactation number</b>	<b>2</b>
<b>days-in-milk</b>	<b>152</b>
<b>butterfat percentage (%)</b>	<b>3.63%</b>
<b>305 ME milk production (lbs)</b>	<b>21,668</b>
<b>cull cow weight (lbs)</b>	<b>1,300</b>
<b>cow cull quality</b>	<b>utility</b>
<b>relative calf value (%)</b>	<b>100%</b>
<b>breed registered (yes, no)</b>	<b>no</b>
<b>probability of being pregnant by 305 days-in-milk (%)</b>	<b>100%</b>
<b>State</b>	<b>US</b>
<b>Appraisal Value (\$/head)</b>	<b>\$1,447</b>

# Dairy Replacements

- Monitor 31 dairy auctions across 16 states
- All report springer heifer prices
  - ❑ Collect prices for top half quality
  - ❑ National average based upon State averages
- Short-bred and mid-bred heifer values function of springer heifer value
- Heifer and Bull Calves: National average of States with prices



# Dairy Replacements

- Open Heifers: Estimate impact of weight on value
  - ❑ Value = base value + value per pound
  - ❑ Estimated equation is used to determine values from 200 to 1200 lbs in 50 lb increments
- Replacement values for bred heifers, open heifers, and calves for the top 23 dairy states equal national values multiplied by individual state-NASS replacement cow price ratio
- Non-Holstein values function of average non-Holstein:Holstein price ratio
- Registered and seedstock premium same percentage increase as 1<sup>st</sup> lactation cow value



# Example: Open Heifer Values

## Appraisal Values (\$/head) of Open Heifers by Weight (lbs)

weight (lbs)	200	250	300	350	400	450	500	550	600
US	\$325	\$370	\$410	\$455	\$495	\$540	\$580	\$625	\$665
AZ	\$330	\$375	\$415	\$460	\$500	\$545	\$590	\$635	\$675
CA	\$305	\$350	\$390	\$430	\$470	\$510	\$550	\$590	\$630
CO	\$340	\$390	\$430	\$475	\$520	\$565	\$605	\$655	\$695
FL	\$340	\$385	\$425	\$475	\$515	\$560	\$605	\$650	\$690
ID	\$330	\$375	\$415	\$460	\$500	\$545	\$590	\$635	\$675
IL	\$315	\$360	\$400	\$445	\$480	\$525	\$565	\$610	\$645
IN	\$330	\$375	\$415	\$460	\$500	\$545	\$590	\$635	\$675
IA	\$325	\$370	\$405	\$450	\$490	\$535	\$575	\$620	\$660
KS	\$305	\$350	\$390	\$430	\$470	\$510	\$550	\$590	\$630

Other 14 dairy states not represented, nor are weight classes 650 to 1200 lbs

United States Department of Agriculture

Animal and Plant Health Inspection Service

Veterinary Services

