Crunching the Numbers to Improve Ranch Efficiency

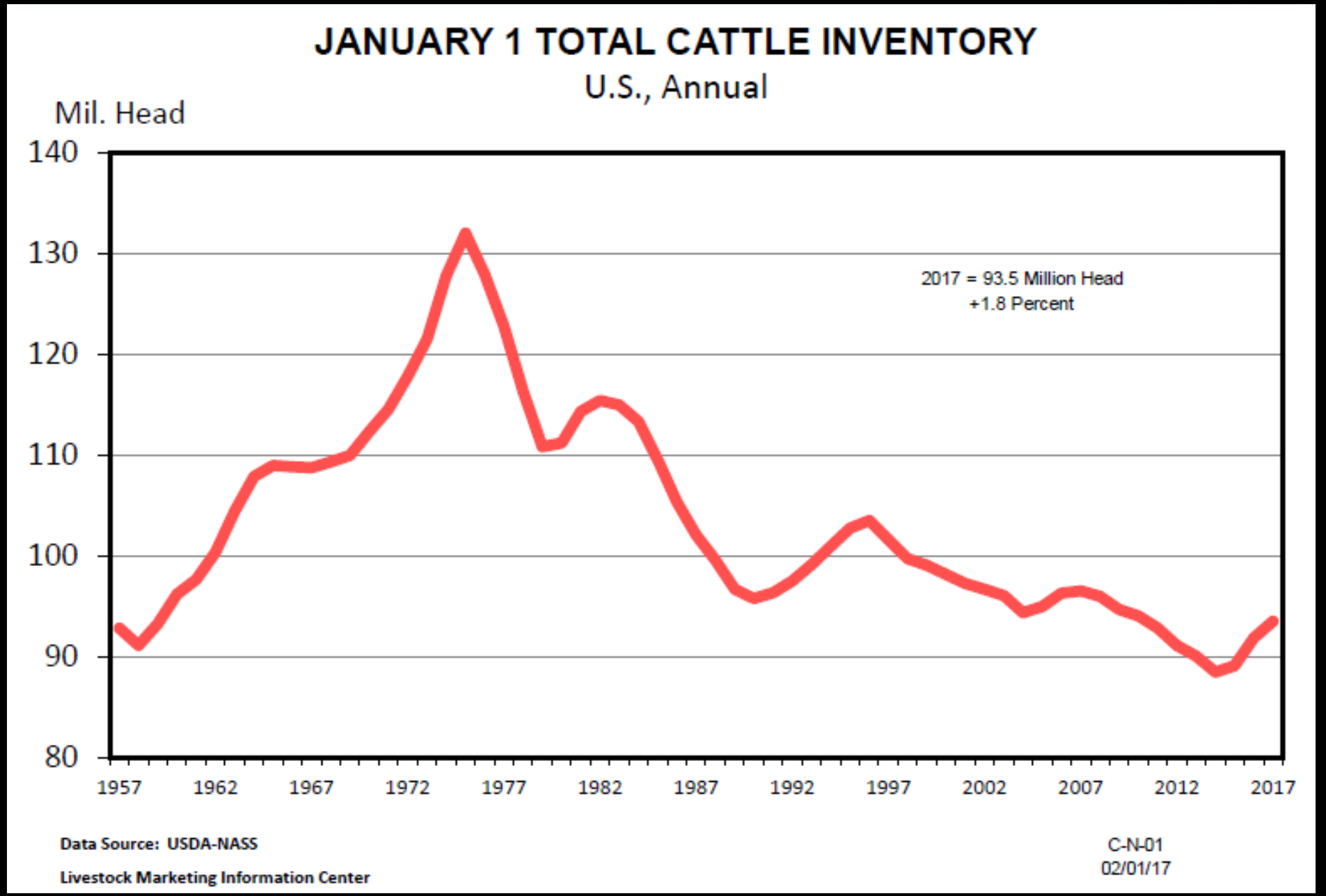
Doug Mayo, Jackson Co. Extension Director

UF | IFAS Extension
UNIVERSITY of FLORIDA

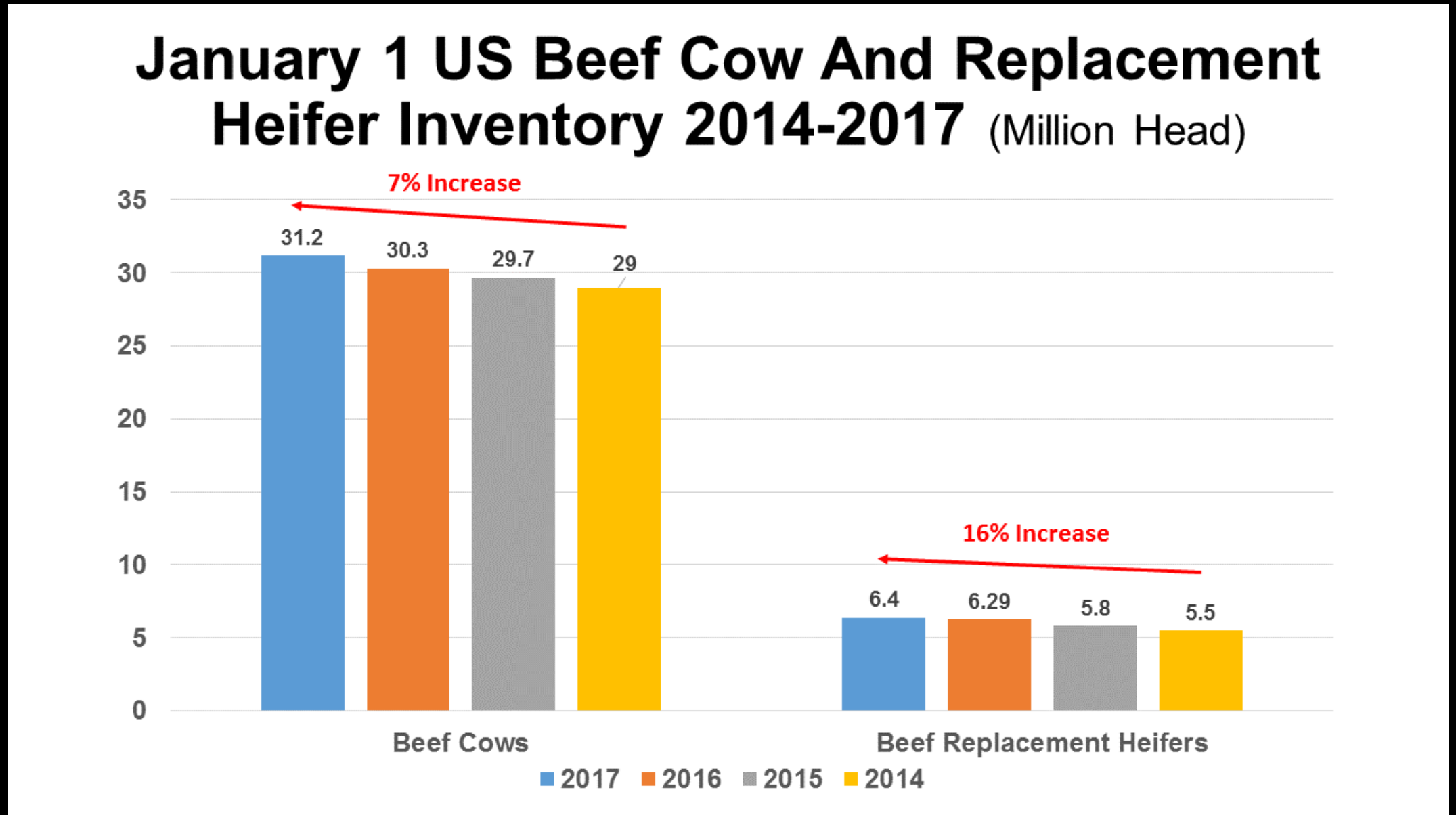
"The University of Florida in Your Home County
providing Solutions for Your Farm"

PANHANDLE AG EXTENSION TEAM

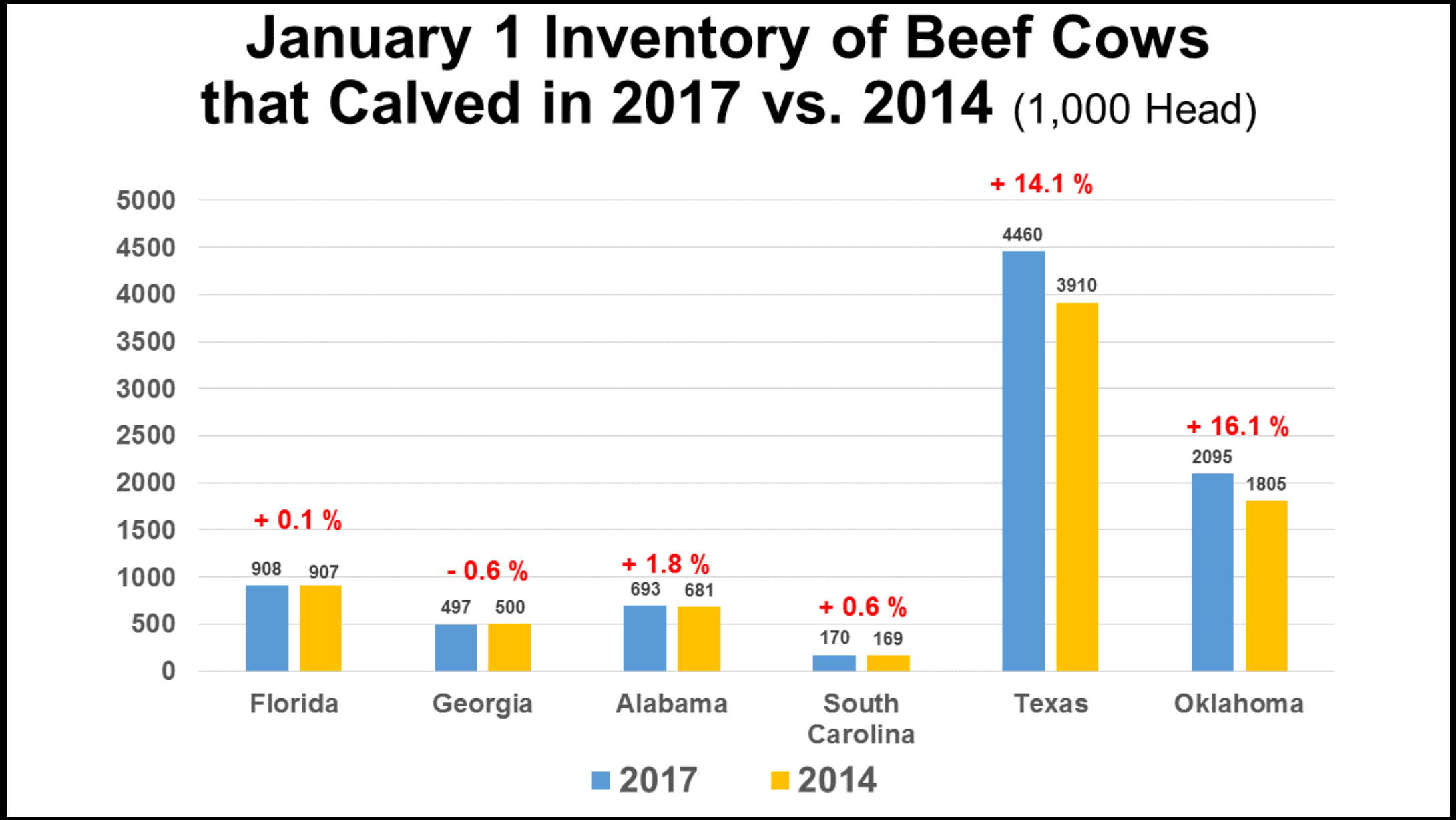
What has Changed?



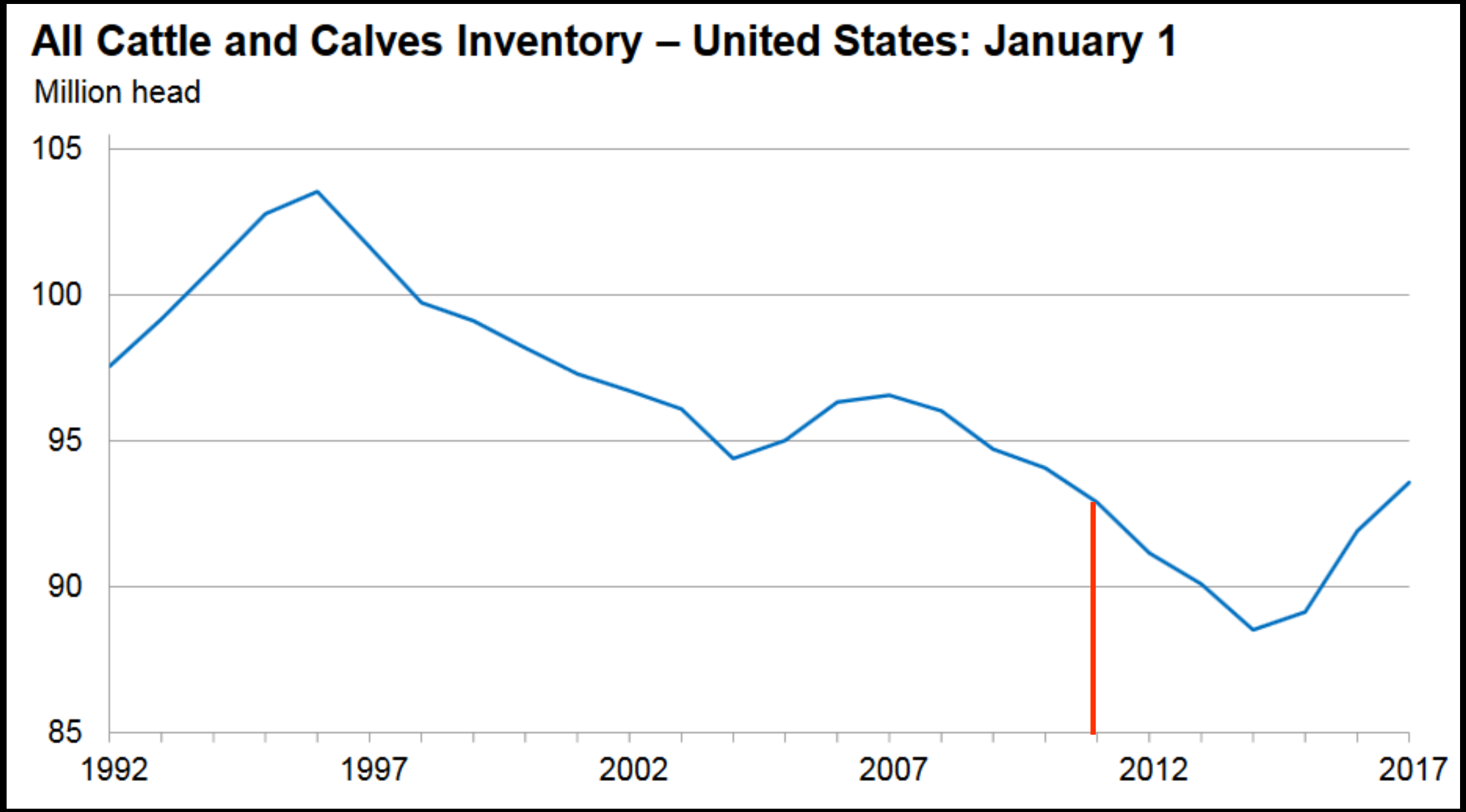
What has Changed?



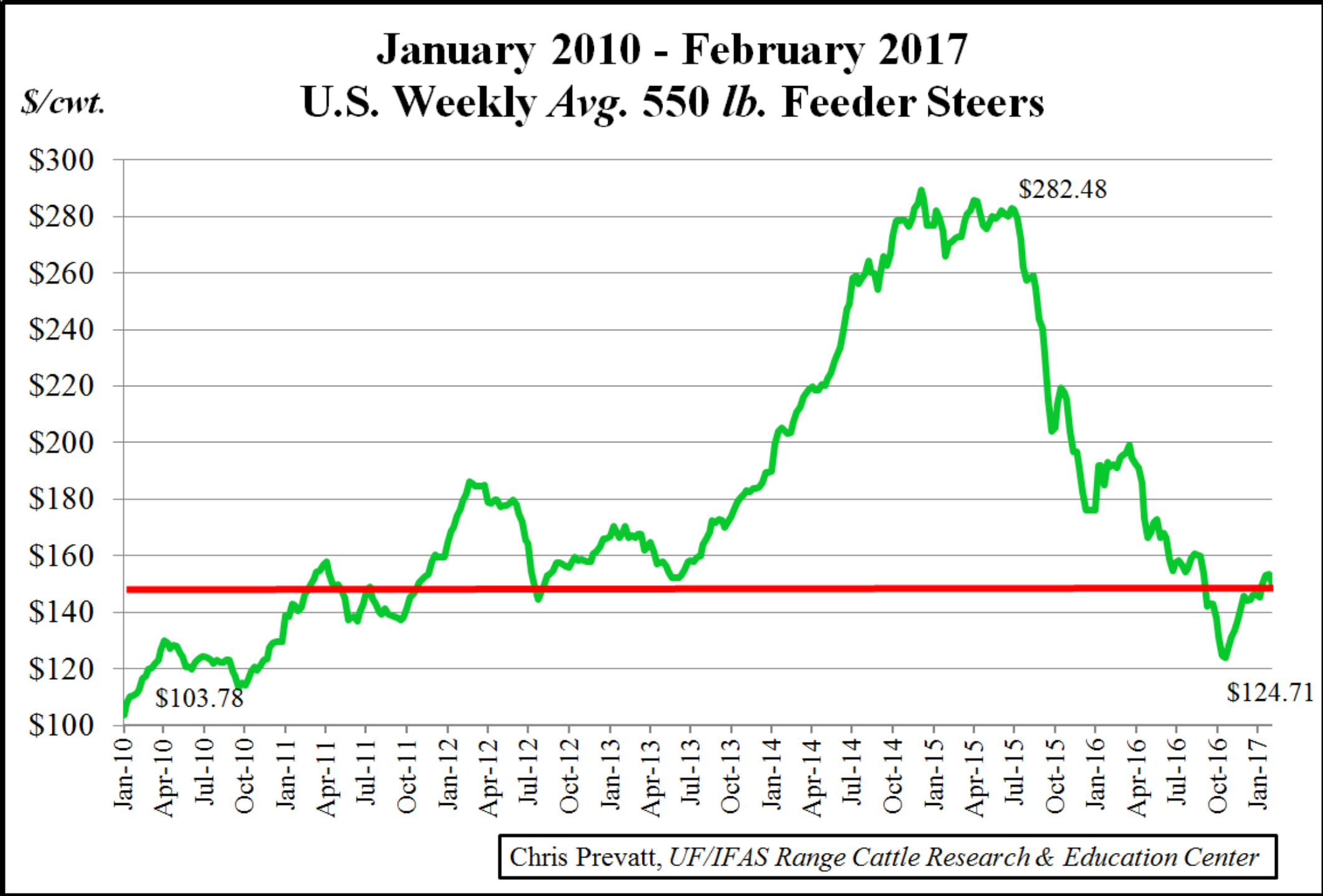
What has Changed?



What has Changed?

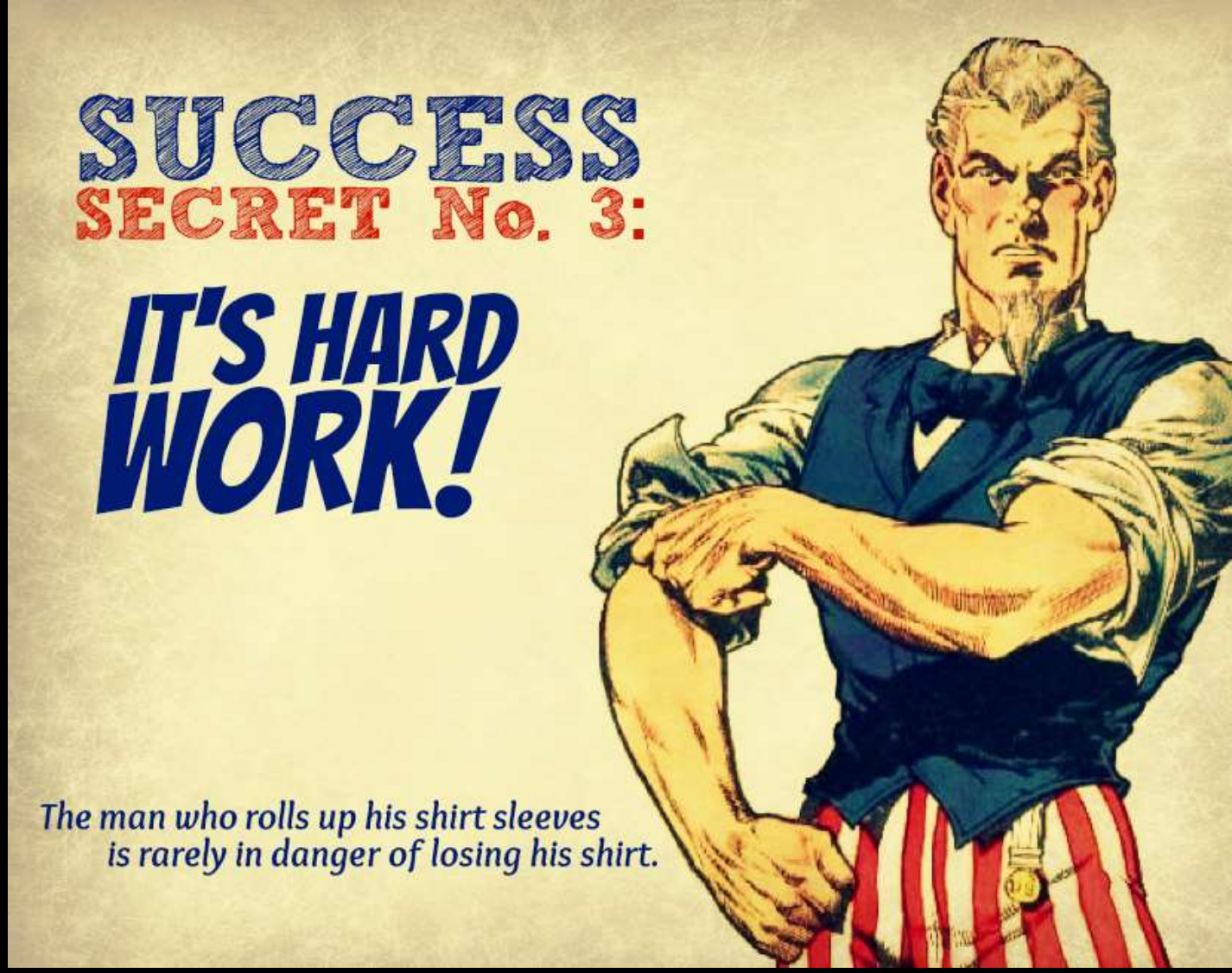


Back to 2011 Prices



Roll Up Your Sleeves & Sharpen Your Pencil

- Record Keeping
- Establish Baseline Production Data
- Establish Baseline Financial Data
- Ranch Analysis
- Benchmarks



USDA NAHM Survey 2007-08

3 Key Questions:

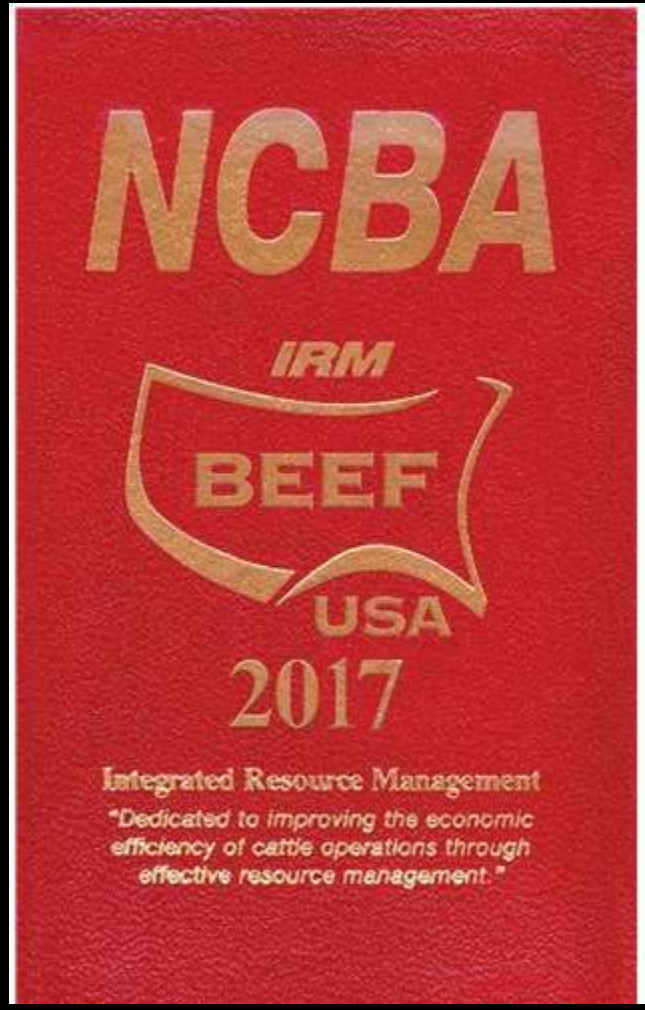
1. **What records should you keep?**
2. **Do analyze the numbers at year's end?**
3. **What do you do with the results to help make decisions?**

Table 1. Percentage of Operations by Record-keeping System Used, and by Herd Size:

Record-keeping System	Percent Operations Herd Size (Number of Beef Cows) 1-49	50-99	100-199	200 or More	All Ops.
Hand-written records (e.g., ledger, notebook, pocket diary)	76.2	80.8	89.1	88.5	78.6
Computer on operation	13.3	24.5	21.8	37.4	17.0
Computer off operation	2.0	4.2	3.7	10.8	2.9
Any of above	80.5	87.0	93.6	95.0	83.3

Herd Records

- **Herd Inventory**
  - **Cows & heifers at start of the breeding season**
  - **Births**
    - **At least track each 21 day period**
    - **Ideally ID each calf**
  - **Deaths**
  - **Sales**
  - **Replacements kept at weaning**
  - **Animals purchased**



Herd Records

- **Pregnancy Rate**
  - **How many pregnant**
  - **How many were in inventory at breeding**
    - **Not number at preg test**

$$\text{Pregnancy Rate} = \frac{\text{Number of cows diagnosed pregnant}}{\text{Number of cows exposed to be bred}} * 100$$

Herd Records

- **Weaning data**
  - **Weaning rate %**
    - $\text{Weaning Rate} = \frac{\text{Number of calves weaned}}{\text{Number of cows exposed to be bred}} * 100$
  - **Average cow production**
    - **LBS weaned per cow exposed**
      - $\text{Pounds weaned per cow} = \frac{\text{Total weight of all weaned calves}}{\text{Number of cows exposed to be bred}} * 100$

Baseline Performance Data

- Inventory
  - Calving distribution
  - Death loss %
- Pregnancy rate %
- Weaning rate
  - Average weaning weight
- Average production per cow

Genetic Selection with Individual ID

- Significant impacts on efficiency
  - Identify best genetics
  - Provides performance curve
    - Not just range and average
- Build cow performance history
    - Limited value without production history
  - Select replacements from top performers
  - cull out poorest performers

Individual ID

- **ID System**
  - **Can use random number series**
  - **Must avoid duplicates**
  - **Electronic ID tags**
- **Year and order of birth**
    - example 85th calf born in 2016 would either be 685 or 856
  - **Another method alphabet year system**
    - example for 29th calf in 2016 would either be 29D or D29
      - No duplicates every 10 years

International Year Letter Designation for Animal Identification

A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	W	X	Y	Z
2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034

Letters I, O, Q and V are not used

Individual Performance

- Each cow in the herd
  - BCS @ calving
  - Calving ease
  - Calving interval
  - Udder & teat score
- Each calf
  - Birth date
  - Birth weight
  - Sex
  - Death loss
  - Weaning weight

Higher Math Data

- Computer Spreadsheets or Programs
- Standardized Weights
  - 205 adjusted Weaning wt
    - **205 day Adjusted Wt.** = $\frac{\text{Actual weaning weight - birth weight}}{\text{Age in Days (weaning date - birth date)}} * 205 + \text{BWt.} + \text{Dam Age Adjustment}$
  - 365 adjusted Yearling wt
- Ratios
  - Compare individual to the average of the herd
    - 100 = average
      - Calf with a 105 ratio is 5% above average

Baseline Financial Data

- Income by category
  - Calves
  - Cull cattle
  - Hay
  - Custom work
- Expenses by category
  - Purchased cattle
  - Fertilizer
  - Feed
  - Labor
  - Equipment
  - Drugs & vaccines

Unit Level Expense & Revenue

- Unit Cost of Production
  - Total per cow
  - Cost per lb of weaned calf
  - Per bale
  - Feed per day
- Unit revenue
  - Per cow
  - Per calf weaned
  - Per bale

Putting All Together: Performance Analysis

- Pregnancy Percentage
  - # Bred Cows divided by # Cows Exposed
- Calving Percentage
  - # Calves Born divided by # Cows Exposed
- Weaning Percentage
  - # Calves Weaned divided by # Cows Exposed
- Lbs. Weaned/Cow Exposed
  - Total pounds weaned multiplied by Weaning %

Putting All Together: Ranch Analysis

- Profit/Loss
  - Total income – total expenses
- Cow Costs
  - Total expenses divided by # Cows Exposed
- Break-even price per pound
  - Total expenses divided by total pounds sold
- Profit/Loss per cow=
  - Profit/Loss divided by # of cows exposed

North Dakota State 2016 CHAPS Cattle Performance Benchmarks

Current CHAPS Production Benchmarks

Number exposed	265 cows
Average cow age	5.6 years
Pregnancy percentage	93.7%
Calving percentage	93.0%
Weaning percentage	90.5%
Calving 1st 21 days	62.7%
Calving 1st 42 days	87.2%
Calving 1st 63 days	96.1%
Average weaning age	193 days
Average weaning weight	553 lbs
Average frame score	5.2
Weight gain per day	2.9 lbs.
Pounds weaned per cow exposed	494 lbs.
Replacement percentage	14.9%
Culling percentage	13.2%

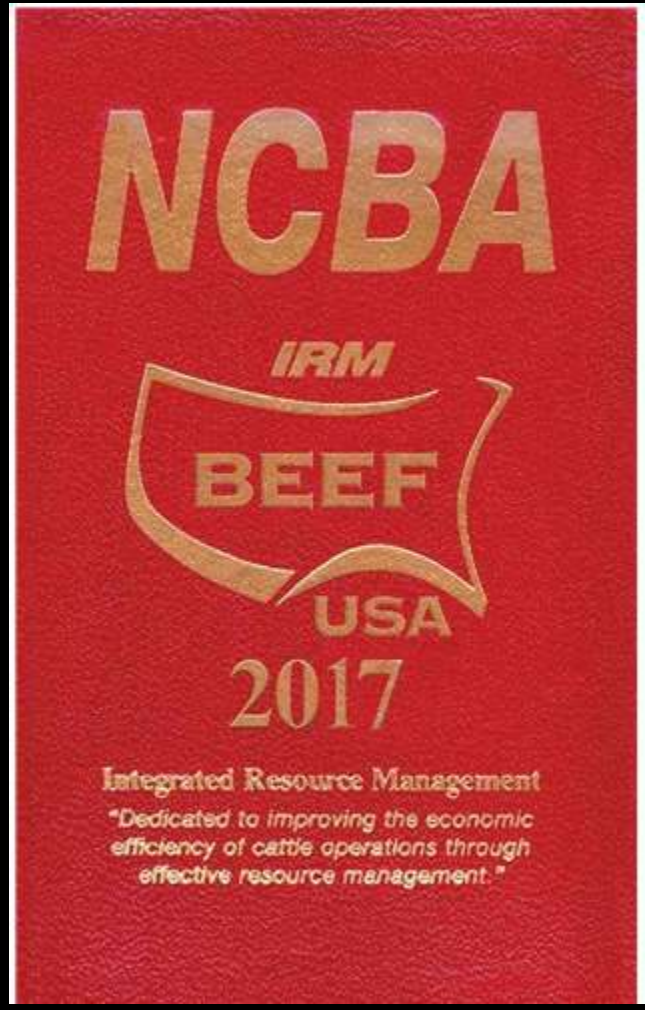
Set Annual Ranch Benchmarks

Texas A&M Key Performance Indicator Targets for Cow-calf Operations

1. **Pounds Weaned per Cow Exposed to be Bred**
   - > 460 pounds per Cow
2. **Revenue per Breeding Female**
   - >$950 per Cow
3. **Nutrition Expense**
   - Between 30-45%
4. **Labor & Management Expense**
   - < 15%
5. **Operating Expense**
   - < 75% of total revenue
6. **Net Income Ratio**
   - > 5%
7. **Cost per CWT Weaned Calf**
   - < $170/cwt.
8. **Current Ratio**
   - > 2
9. **Total Investment per Cow**
   - Between $7,500 and $12,500
10. **Debt per Cow**
    - < $500 per cow
11. **Equity to Asset Ratio**
    - > 50%
12. **Asset Turnover Ratio**
    - > 15%
13. **Rate of Return on Assets**
    - > 1.5%

Stan Bevers and David Anderson
Professors & Extension Economists
Texas A&M University System

Record Systems



- **NCBA Redbook**
  - **Base records recorded annually**
    - http://www.beefusa.org/redbook.aspx
      - $7 per book
- **Utilize Companion Spreadsheet**
  - http://www.beefusa.org/spacalculationsworksheet.aspx

Record Systems

- Florida Ranch Record Notebook
  - Loose leaf notebook
    - http://jackson.ifas.ufl.edu/agriculture/cattleranchrecords/
      - $10 per book
      - Download and print yourself for free
  - Herd records
  - Cow History sheets
  - Pasture records for BMPs
  - Basic financial records
- Customizable
  - Hand written
    - Use worksheet for analysis

Free Computer Spreadsheets

- **NCBA SPA EZ**
  - http://www.beefusa.org/spacalculationsworksheet.aspx
- **Noble Foundation Cow Calf Net Returns**
  - https://www.noble.org/ag/services/tools/
- **UF Cow Calf Budget**
  - http://rcrec-ona.ifas.ufl.edu/Economics/index.shtml

Commercial Software

- **Farm Works Stock**
  - www.farmworks.com
- **Livestock Manager Software**
  - http://www.livestockmanagers.com
- **Cow Sense**
  - http://cowsense.com
- **CattleMax Online**
  - http://www.cattlemax.com
- **THE Beef Cattle fIRM**
  - http://economics.ag.utk.edu/firm.html
- **CattlePro**
  - www.cattlepro.com

Sharpen Your Pencil

- Start simple
  - Herd records
  - Tax returns
- Not just record keeping
  - Must do the analysis
- Use per unit costs for decisions
- Set some benchmarks
- Fine tune management
  - Individual ID
- Make hard decisions

Questions?

Doug Mayo
demayo@ufl.edu
850-482-9620