



Dairy Beef Short Course

March 28, 2017

I-29 Moo University is a collaboration of Dairy Extension faculty and industry partners listed below.



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I-29 Moo-University – Dairy Beef Short Course

March 28th, 2017, Registration 10 am, Program 10:30 am – 3:00 pm
Denny Sanford Premier Center, Sioux Falls, SD; Meeting Rooms 6-7

Agenda

10 am – Registration / coffee & cookies, visit sponsors

10:30 am – Opening remarks – What is the Dairy Beef Hoof Print – Kim Clark, UNL Dairy Extension Educator

10:45 am - Vaccination and Implant Protocols

“Selecting the right vaccines and implants for your operation to improve herd health, optimize performance, and exceed customer expectations.” – Russ Daly, SDSU Extension Veterinarian

11:45 am - Managing Liver Abscesses in the VFD Age

“Learn about management strategies to minimize acidosis and liver abscess issues and comply with the VFD regulations. – Warren Rusche, SDSU Extension Beef Feedlot Specialist

12:15 pm – Sponsors

12:30 pm – Lunch

1:00 pm – Sponsors

1:30 pm – Marketing Dairy Beef in 2017

“Issues surrounding marketing dairy beef, including market access, price discovery, increased red meat supply, and end product specifications.” Brad Kooima, President Kooima & Kaemingk Commodities, Inc.

2:15 pm – Financial Management and Working with Lenders

“Gain insight into what bankers are looking for as they work with cattle feeders.” Dave Karnopp, Retail Commercial Lender /Beef Specialist - Farm Credit Services,

3:00 pm – Wrap up closing remarks – Heidi Carroll, SDSU Extension Livestock Stewardship Associate

Adjourn

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For More Information

Please contact an I-29 Moo University member or visit the conference website at:

 <http://igrow.org/events/i-29-moo-university-dairy-beef-short-course/>

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Dairy Beef Short Course Sponsors



Vaccination and Implant Protocols for Dairy Beef
Dairy Beef Shortcourse – I-19 Moo University Collaboration
Russ Daly, Extension Veterinarian
Robbi Pritchard, Professor
South Dakota State University

Vaccination Considerations for Dairy Beef

Dairy breed steers are subject to a number of health issues post-weaning, including:

- Pneumonia (Bovine Respiratory Disease Complex)
- Digestive issues (e.g., bloat, acidosis, enterotoxemia, salmonellosis)
- Lameness (infectious as well as injury-based)
- Pinkeye

Of these conditions, the most prevalent and profound is that of Bovine Respiratory Disease Complex (BRDC). The germs that cause respiratory disease in dairy beef calves are no different than those causing problems in beef breeds in the feedlot. The most important of these are:

- Bacteria
 - *Mannheimia hemolytica*
 - *Histophilus somni*
 - *Pasteurella multocida*
 - *Mycoplasma bovis*
- Viruses
 - Bovine Respiratory Syncytial Virus (BRSV)
 - Infectious Bovine Rhinotracheitis (IBRV)

While the germs are similar between dairy and beef breeds regarding pneumonia causes, the risk factors that contribute to clinical illness can be different. In dairy breeds, many of these risk factors are present early in life - in the pre-weaning phase for example. Insufficient ventilation, insufficient bedding, poor colostrum consumption, and group housing are just some of the factors contributing to early respiratory disease in dairy calves. Disease processes, even when sub-clinical (not outwardly noticeable), can set a calf up for problems later on.

Following weaning, common risk factors that contribute to BRDC include transportation, co-mingling, weather events, dust, and ration changes, just to name several. Longer-term stresses associated with these events impair several different aspects of the immune system. This diminished immunity helps bacteria from the upper respiratory tract gain access to the lower lung to cause inflammation and pneumonia. In addition to these environmental events, viral infections with BRSV, IBRV, Bovine Viral Diarrhea virus, and others can also predispose the respiratory tract to pneumonia.

Vaccination against BRDC pathogens is one tool producers can use to help minimize the clinical effects of these germs. Such vaccines in general include:

- Combination viral vaccines against BRSV, IBR, BVDV, and PI-3 (parainfluenza) – available as modified-live or killed versions

- Bacterial vaccines against *Mannheimia hemolytica* and *Pasteurella multocida* – either singly or in combination with each other and/or the viruses
- Bacterial vaccines against *Histophilus somni* and *Mycoplasma bovis*

In addition to BRDC, other health issues for which vaccines are available include Clostridial diseases such as enterotoxemia, pinkeye, and Salmonellosis.

Vaccination Choice Considerations

- Viral combination vaccines are the mainstay of bovine respiratory vaccine programs. In most cases, modified-live versions are preferable. Intranasal vaccines show effectiveness in stimulating immunity against these viruses as well.
- Vaccines against *Mannheimia hemolytica* are designed to work against the leukotoxin produced by the bacteria and are generally worth including in a respiratory disease prevention program. Combinations with *Pasteurella multocida* may be beneficial in some cases.
- Vaccines against *Histophilus somni* are generally ineffective against BRDC, but can be useful in preventing other syndromes caused by *H. somni*.
- Vaccines against *Mycoplasma bovis* have not shown consistent usefulness.
- Clostridial vaccines (e.g., 7-way vaccines) are considered effective and are recommended for use. Producers should repeat vaccinations as outlined on the label of the particular product used.
- Vaccines against pinkeye are available, however vaccination “failures” are not uncommon, due to less than adequate cross-protection between strains of pinkeye-causing bacteria.

Vaccination Timing Considerations

- Because of the role stress plays in the development of BRDC, producers should anticipate future stressful events on animals and work to ensure that optimal immunity is “on board” prior to those events.
- Movements of animals to different pens/facilities and co-mingling events are of particular importance. Respiratory disease vaccines (MLV viral combinations +/- *Mannheimia* or *Pasteurella*) should be given to animals at least 2 weeks prior to those events.
- Clostridial vaccines should normally be given in conjunction with the respiratory vaccines noted above, although there usually is no need to booster these vaccines more frequently than noted on the label.
- For steers transported long distances, recent research reveals that vaccination upon arrival is not a good idea. Animals that are undergoing stress will not respond well to any vaccine. In these cases, pre-transport vaccination (as noted above) is preferable. If this is not possible, cattle should not be vaccinated any earlier than 10-14 days post-arrival. This improves the odds that cattle have sufficiently recovered from the stress of transportation and acclimation, and will sufficiently respond to the vaccine.

Growth Implant Considerations for Dairy Beef

The use of growth implants in growing steers and heifers is one of the most economically advantageous interventions a producer can make with his or her animals. Estrogenic implants increase dry matter intake and improve average daily gain while reducing feed conversion (pounds of feed per pound of

gain). They exhibit these effects by stimulating growth hormone release from the pituitary gland as well as having a direct muscle cell-building effect, among other effects. The androgenic hormone Trenbolone Acetate (TBA) is the other implant ingredient. This hormone stimulates muscle cells to produce protein, while slowing the body's "burning up" of protein. Researchers noted a synergistic effect when estrogenic compounds were combined with TBA; therefore, many implants currently on the market are combination products.

In addition to the active ingredient, implant products vary according to the carrier substance in which the hormonal product is contained. These carriers influence the duration of effect of the implant. Therefore, implants not only vary according to dosages of the hormone(s) contained, they vary according to how long they release the hormone into the calf's system.

Implants Available for Use in Dairy Steers (Examples)¹

Brand Name	Estrogen content (mg/implant)	Progesterone content (mg/implant)	TBA (androgen) content (mg/implant)	Re-implant window (days)	Estimated Duration/payout (days)
Lower Potency Implants					
Ralgro [®]	36 (zeralanol)			45-60	70-100
Synovex C [®]	10 (estradiol benzoate [EB])	100		45-90	100-140
Component E-C [®]	10 (EB)	100		45-90	100-140
Moderate Potency Implants					
Revalor G [®]	8 (estradiol-17 β)		40	70-110	100-140
Synovex S [®]	20 (EB)	200		70-100	100-140
Component E-S [®]	20 (EB)	200		70-100	100-140
Compudose [®]	25.7			140-170	170-200
Encore [®]	43.9			140-170	300-400
Synovex ONE Grass	21		150	170	200
Component TE-G [®]	8		40	100	120
Intermediate Potency Implants					
Synovex Choice [®]	14		100	70-100	80-110
Component TE-IS [®]	16		80	70-100	80-120
Higher Potency Implants					
Revalor S [®]	24		120	90-100	100-140
Component TE-S [®]	24		120	90-100	100-140
Synovex ONE [®] Feedlot	28		200	80-100	200
Intermediate Potency – Delayed Release High Potency					
Revalor XS [®]	40		200	200-240	230-270

¹Adapted from Holland (2011)

Principles of Growth Implant Use in Growing Cattle

- Implant potency needs to be matched to animal nutrition.
- Too much estrogen causes bullers, dark cutters.
- Start with lower potency implants and build up over time.
- Count back from expected marketing date to determine best timing of implants.
- Don't reimplant calves that are under significant influence from the previous implant.
- Don't let implants run out; don't come up short at the end.

Implanting Mechanics: Reminders

- Keep implant guns in good working order.
- Use sharp, clean needles to implant calves – use sponge soaked with disinfectant in between animals.
- Clean the ear first if visibly soiled with manure or mud.
- Use technique that does not crush implants.
- Place implants in the middle 1/3 of the ear (top-bottom + side to side); implant short ears as if they were still intact.

Caveats and Differences in Using Growth Implants in Dairy Breeds vs. Beef Breeds

- Holsteins are more sensitive to the effects of estrogen compared to beef breeds.
- Early growth of Holsteins is very efficient – implants may not be needed early on. Holsteins not implanted until 450-475 # can do as well or better than those implanted at 350 #.
- First implants should be low-potency (e.g. Ralgro, Synovex C).
- Revalor XS has some unintended consequences in Holsteins, mostly in the form of increased buller problems.

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Dairy Steers and Liver Abscesses in the VFD Age

Warren Rusche
SDSU Extension Beef Feedlot Management Associate



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Why Worry About Liver Abscesses?

- Reduction in total value
 - \$10 - \$16 per head export value for livers
 - Severe abscesses associated with 20 pounds less HCW
 - Potential for increased carcass trim loss
- Impact on performance
 - Severe abscesses: 0.22 reduced ADG
- Problems in the processing chain



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What Are Liver Abscesses?

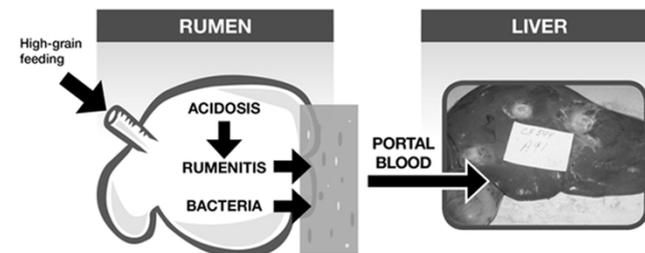
- Primary liver abnormality in feedlot cattle
- No clinical signs, only found post-mortem
- Related to acidosis and rumen damage
 - “Acidosis-rumenitis-liver abscess complex”
- Damage to rumen walls allows pathogens to attack liver



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How Do Liver Abscesses Occur?



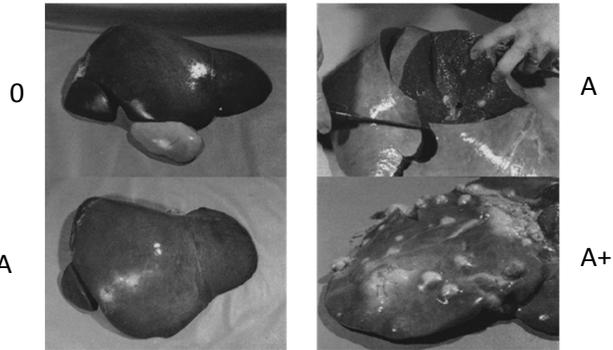
Courtesy Ryan Eichler, Elanco



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Liver Abscess Classification



Courtesy Ryan Eichler, Elanco
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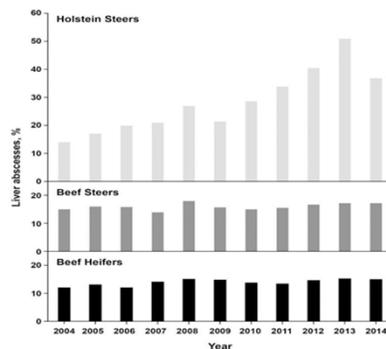
Pathogenic Agents

- *Fusobacterium necrophorum*
 - Primary pathogen
- *Trueperella* (formerly *Arcanobacterium*) *pyrogenes*
 - Secondary
- *Salmonella* recently isolated in liver abscesses in Holsteins

Amachawadi and Nagaraja, 2016

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Liver Abscess Differences Between Classes of Cattle



- Dramatic increase in liver abscesses in Holsteins
- Increased percentage of A+ liver scores in Holsteins (50 to 60% of total abscesses)

Elanco Liver Check Service - 2015

Amachawadi & Nagaraja, 2016

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Possible Reasons for Increased Abscesses in Holsteins

- Differences in starch load
 - Fed high-concentrate diets for a longer period of time
 - Greater feed intakes
- Result:
 - Increased amount of starch “load” placed in rumen
 - Increased opportunity for acidosis

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Holsteins are Just Different

- Increased grooming
 - Possibly increased ingestion of hair
- Increased sorting of their ration
 - Changes in amount and/or characteristics of the roughage they consume
- Wetter pens due to greater water intake and urination
 - More favorable environment for microbes

Eng, 2005



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Effect of Forage Level and Length on Percent Liver Abscesses

	One Inch Screen	Three Inch Screen
8% Roughage	12.5%	0%
16% Roughage	12.5	0%

Calderon-Cortes and Zinn, 1996



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Antibiotic Control

- Six antibiotics approved
 - Bacitracin
 - CTC
 - OTC
 - Neomycin + OTC
 - Virginiamycin
 - Tylosin (Tylan)
 - Most commonly used
- VFD REQUIRED!



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Effect of Different Diet and Drug Combinations

	DRC/HMC Monensin + tylosin	25% WDGS Drug Free	25% WDGS Monensin	WDGS Monensin + tylosin
ADG	3.72 ^a	3.87 ^b	3.92 ^b	3.96 ^b
F:G	6.29 ^a	6.17 ^a	5.98 ^b	5.88 ^b
Percent Liver Abscesses	17.0 ^a	42.4 ^b	40.8 ^b	8.3 ^a
Percent A+ Liver Scores	4.4 ^a	16.5 ^b	19.1 ^b	3.8 ^a

Meyer et al., 2013



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Alternative Control Methods?

- Essential oils
 - Some reduction seen in limited research
 - Not statistically different
 - Less effective than tylosin

Meyer et al., 2009

Vaccination Strategies?

- Fusogard (Elanco) is labelled to prevent liver abscesses
- Limited success
 - Reduced LA when incidence was low (10%)
 - No difference at higher incidence levels

Management Strategies

- Minimize acidosis bouts!
- Risk factors:
 - Mistakes in getting cattle started
 - Not enough effective roughage
 - Feed intake variation
 - Inadequate effective fiber

Minimizing Feed Intake Variation

- Consistent feeding times
- Consistent delivery amounts
- External factors
 - Weather
 - Cattle mobility





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Marketing Dairy Beef in 2017

Brad Kooima, President Kooima & Kaemingk Commodities, Inc.

Topic Areas:

1) History of turbulent fed Holstein Market

2) Review of latest industry happenings

3) Market Outlook

Contact Information:

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Sioux Center, IA 51250

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FINANCIAL MANAGEMENT AND WORKING WITH LENDERS

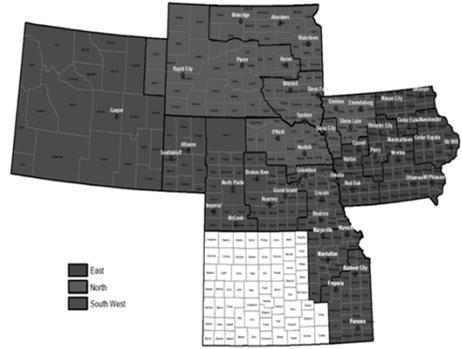
Farm Credit Services of America

Dave Karnopp

Retail commercial Lender - Beef



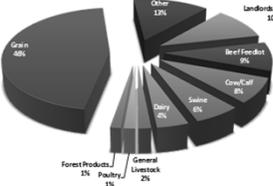

- Serve all of Iowa, Nebraska, South Dakota, Wyoming, and the eastern portion (41 counties) of Kansas
- More than 57,000 customers
- Own/service nearly \$28 billion in loans
- 48 retail offices
- Approximately 1,600 employees




Industries Served



Portfolio Concentration (Industry Group Top 10)
As of June 2016

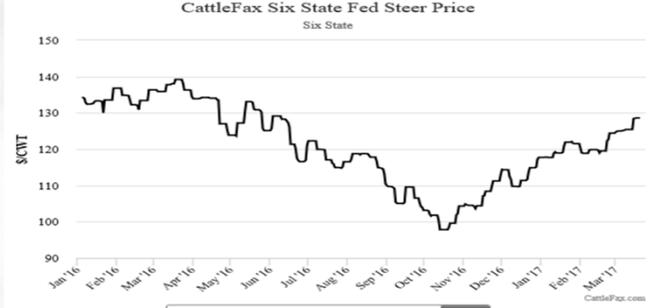


Industry Group	Percentage
Grain	48%
Landlords/Investors	32%
Beef Feedlot	6%
Cow/Calf	6%
Swine	6%
Dairy	2%
General Livestock	2%
Forest Products	1%
Poultry	1%
Other	13%

Portfolio Concentration
As of June 2016

Industry Group Top 10	Net Book Value (millions)
Grain	\$12,093
Other	\$3,523
Landlords/Investors	\$2,667
Beef Feedlot	\$2,386
Cow/Calf	\$2,077
Swine	\$1,605
Dairy	\$1,074
General Livestock	\$426
Poultry	\$380
Forest Products	\$359
Total	\$26,589

CattleFax US Average Fed Steer Price Per CWT (past 15 mos.)

CattleFax Six State Fed Steer Price
Six State

CattleFax.com

Current Status

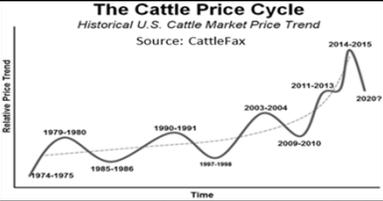


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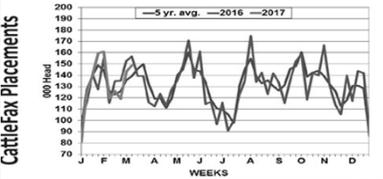
- Cattle coming out of feedlots, without use of risk management, last month were making \$150/head. Cattle being placed have some moderate profit potential assuming par basis and given lower costing feeder cattle and declining corn prices. 2017 is shaping up to be a profitable year and with back month futures discounted it will encourage feedlots to pull cattle ahead.
- Packers continue to enjoy \$150+ per head profits – encouraging stronger fed cattle slaughter levels. This should allow the market to smooth out of the larger placed- against supplies this summer. Cow/calf to be profitable in 2017.
- Feedyards percent fill remains just above 5 year average. On feed inventory is moderately current exemplified by continued lower carcass weights (4-5 lbs on average) as there remains no futures market incentive to carry longer on feed.

The Cattle Price Cycle

Historical U.S. Cattle Market Price Trend
Source: CattleFax



CattleFax Placements



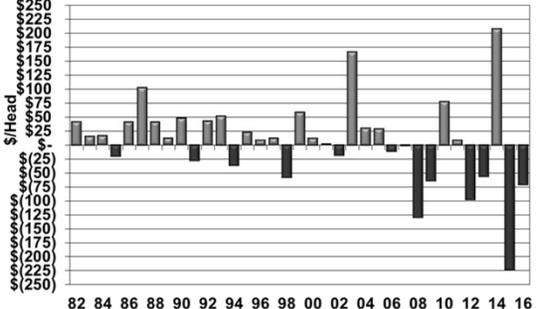
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Cattle Feeding – Historical View



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Fed Cattle Profit/Loss- Simple Avg. Assumes No Risk Management



Source: CattleFax
Assumes No Risk Management

5

Production Agriculture – A Competitive Environment



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“The function of a competitive market is to drive the economic return to the average producer to breakeven through supply and demand in both input and output markets. *In equilibrium, the top end are profitable and growing, the average are hanging in there, and the bottom end are losing money and exiting the industry.* Business success and survival depend on continuous improvement at a pace necessary to stay in the front half of the pack.”
---Professor Danny Klinefelter, Texas A & M University

Business Success Factors:

<ol style="list-style-type: none"> 1. Marketing 2. Production 	} Margin Management	
<ol style="list-style-type: none"> 3. Surviving Industry Cycles 4. Capitalizing on Opportunities 	} Solvency & Liquidity	

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Achieving Competitive Advantage (and success).



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Industry Examples:

- Comparative feed cost – WDDGs & rail freight favored N. Plains vs S. Plains feeders
- Premiums due to genetics, feeding expertise, or source verified & hormone or ABF
- Cattle procurement advantages and/or risk management expertise

Identifying Your Own Strengths & Weaknesses

- Local feed source niche
- Backgrounding expertise and advantages
- Partnering with the **right** partner.
- Option to adjust scope & scale of operations, or just lay out

7



Lending Standards

- Financial Measurements – The 5 C's of Credit
 - Character
 - Capital
 - Capacity
 - Collateral
 - Conditions

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Character

- Reputable Feedyard with proven history
- Adequate Financial reporting and record keeping
- Competitive cost of gain
- Demonstrated skills in hedging or contracting livestock and feed
- Herd Health
- Care of Condition of facilities
- Ability to keep the facility adequately used

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Capacity

- Does the operation show profitability?
- Are the earnings sustainable?
- Do the actual and projected break evens correlate?
- Does the projected cash flow correlate with balance sheet net worth gains?

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Capital

- Working capital is the most critical measurement of capital adequacy because of the need to margin cattle feeding loans with short term assets
- Why is working capital important to me?
 - Allows you to take advantage of future opportunities (i.e. down payments)
 - Helps offset volatility in the market
 - Gives you back up cash to make payments in a stressed year
 - “Staying power to weather the storm”

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Liquidity Standards (Unit)

- \$350 Working Capital Per Head (Feedlot)
- \$100 Working Capital Per Cow
- \$45 Working Capital Per Hog
- \$200 Working Capital Per Acre
- Current Ratio
 - > 2 Desirable
 - 1 – 2 Stable
 - < 1 Risky

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Capital

- **What can I do to improve my working capital and current ratio?**
 - **Minimize capital spending** - resist the temptation to make purchases solely to avoid paying taxes. Many businesses go broke attempting to minimize taxes
 - **Minimize interest rate risk** – look for ways to lock in interest rates for a fixed period
 - **Do not prepay intermediate or long-term debt** – carefully consider your future cash needs. If you have your debt locked in at a low rate it may be better to invest your cash in a more liquid source
 - **Manage risk of production loss** – develop a risk management plan that includes life insurance, crop insurance, casualty insurance

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Collateral

- The adequacy of collateral offered as security.
- What is the asset value?
- What is the relationship between the loan and collateral value? Is the asset marketable?
- What is the quality of the asset?
 - **Real Estate – 65% Ln/CV**
 - **Chattels – 70% Ln/NRV**

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Collateral

- Third Party Risk
 - Any Cattle placed in outside yards should formally notify any potential lenders of the third party as to the ownership of the cattle.
 - Do Due Diligence when prepaying feeds and services of the provider you are working with.

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Conditions



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- Borrowing base
 - Cattle feeding operations require a high emphasis to be self liquidating and have adequate margins for adversity

- Annual inspections

- Financial reporting
 - Balance sheets
 - Income statements

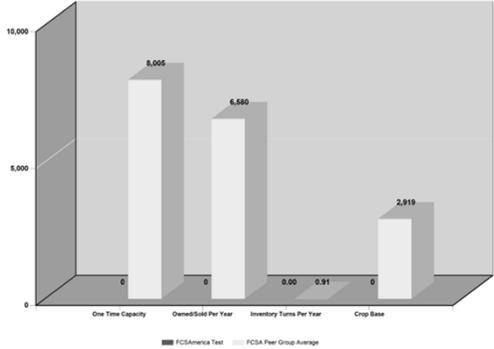
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Benchmarking



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Operation Size & Scope



Metric	FCSAmerica Test	FCSA Peer Group Average
One Time Capacity	8,005	0
Owned/Sold Per Year	6,580	0
Inventory Turns Per Year	0.00	0.91
Crop Base	2,919	0

- 15 Customers in Iowa and NE Nebraska
- Range of 5,000 to 20,000 head capacity

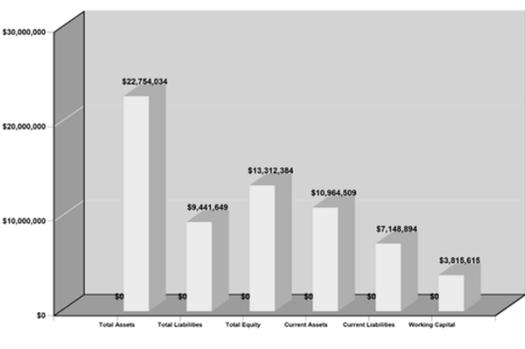
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Benchmarking



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Balance Sheet Comparison



Metric	FCSAmerica Test	FCSA Peer Group Average
Total Assets	\$22,754,034	\$0
Total Liabilities	\$0	\$0
Total Equity	\$9,441,649	\$13,312,384
Current Assets	\$10,964,509	\$0
Current Liabilities	\$7,148,894	\$0
Working Capital	\$3,815,615	\$0

Equity: Total Assets - Total Liabilities
 Working Capital: Current Assets - Current Liabilities. The greater the working capital, the greater the ability of the operations ability to withstand adversity and risk.

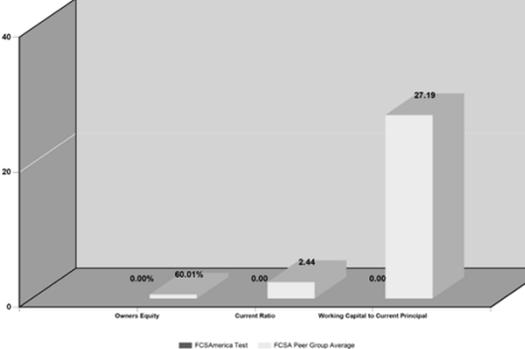
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Benchmarking



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Balance Sheet Comparison



Metric	FCSAmerica Test	FCSA Peer Group Average
Owner's Equity	0.00%	60.01%
Current Ratio	0.00	2.44
Working Capital to Current Principal	0.00	27.19

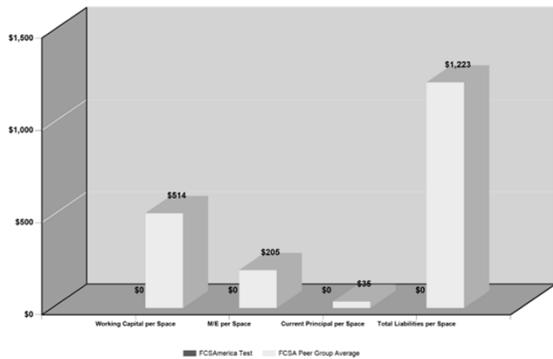
Owner's Equity: Total Equity / Total Assets. Shows the owner's interests in the assets of the business. Typically 40% minimum over 60% is preferred.
 Current Ratio: Current Assets / Current Liabilities. 1.2 minimum, over 1.50 is preferred.
 Working Capital to Current Principal: Working Capital / current portion term debt. Shows the ratio of working capital that could pay just the current principal portion of term debt.

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Benchmarking



Balance Sheet Comparison to One-Time Capacity

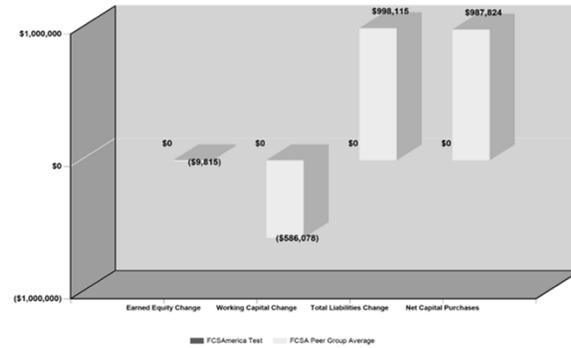


Working Capital per Space: Working Capital per space.
 Machinery & Equipment Investment per Space: Impacted by crop base.
 Current Principal Payment per Space: Current portion principal payment per space.
 Total Liabilities per Space: Total liabilities per space.

Benchmarking



Annual Performance



Earned Equity Change: The annual change of earned equity (net inflation and deflation of capital assets, and capital infusions or withdrawals) is an indication of the operation's ability to retain profits.
 Working Capital Change: The annual change to working capital (current assets - current liabilities).
 Net Capital Purchases: Capital purchases less sales - the investment and/or reinvestment in the operation.

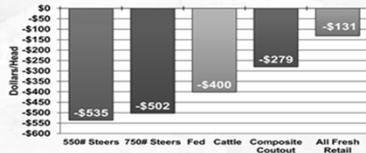
Risk Management



- Volatility in markets
 - Cattle Industry has lost \$4.5 Billion in last 14 months

Market Value Volatility

Dollar Per Head Change Year to Date



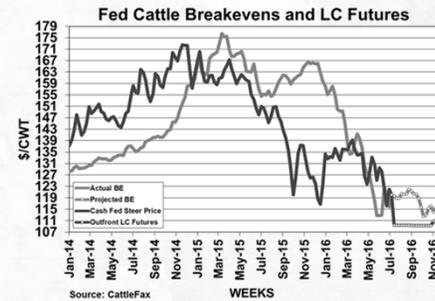
Source: USDA and CattleFax
 (Corn cost calculated at \$0.50/bushel, soy cost calculated at \$0.50/bushel for 100 days)

Break Evens



- What are your break evens?

- Factors
 - Weather
 - COG
 - Death loss
 - Feed Costs
 - Basis
 - Type of Cattle
 - Level of risk warranted



Source: CattleFax



Risk Management

- Vehicles for risk management
 - Options
 - Puts (A good strategy similar to crop insurance. Keeps floor on losses and leaves the upside open)
 - Fence (Buy puts and sell calls. Creates a window of limited losses and a cap on upside potential in profits.)
 - Hedge positions on the board
 - Flexibility with forward pricing
 - Positive is able to liquidate when you want. Negative is margin calls.
 - Basis Contracts
 - Contract with Packer. This results in no margin calls. Some packers are allowing more flexibility into their contracts. Positive - no margin calls. Negative - packer control/captive supply.

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Risk Management

- How does a lender view risk management?
 - Depending on your size and scope, a solid risk management plan will help you stay in the ball game.
 - Capital needs have increased, but we are looking at the same margin. What used to be a \$1200 investment is now an \$1800 investment and the return is still \$50-\$100/head.
 - Set goal targets and stick to executing on them when they arrive.
 - Communication, communication, communication
 - Producers and Lenders need to have high communication. Whether the lender needs to cut back credit line or the producers needs more money for margin or cattle procured, the communication needs to be higher. Having a solid plan going forward will allow the Lender to make a quicker decision or extend more credit knowing there is plan in place

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Risk Management

- Marketing plan
 - We are not going to tell you when and how to market your livestock. This is a management decision. If it is a true hedged position we will stand behind the decision and whether the margin storm. Marketing is not our business.
- Collateral Margin
 - Individual pens

Price Protected	Equity/Head Range
No	25-30% of initial cost (1)
Yes	15-20% of initial cost
 - Borrowing base advance rate

Market Cattle - not protected	70 to 75%
Market Cattle - Price Protected	75 to 80% (1)

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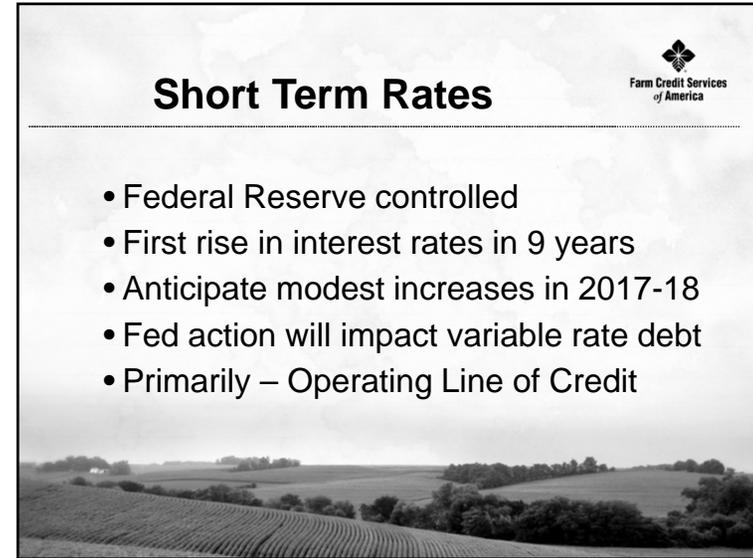
Summary

- Continue to build and establish strong working capital
 - Favorable interest rate environment allows you to rebuild if necessary
 - Term out any capital expenditures that might have been taken out of working capital last 2-3 years
- Margins have tightened.
 - Risk management and execution will be a key to being able to stay in the game.
 - Volatility in markets will continue. How can you mitigate the risk to your operation?

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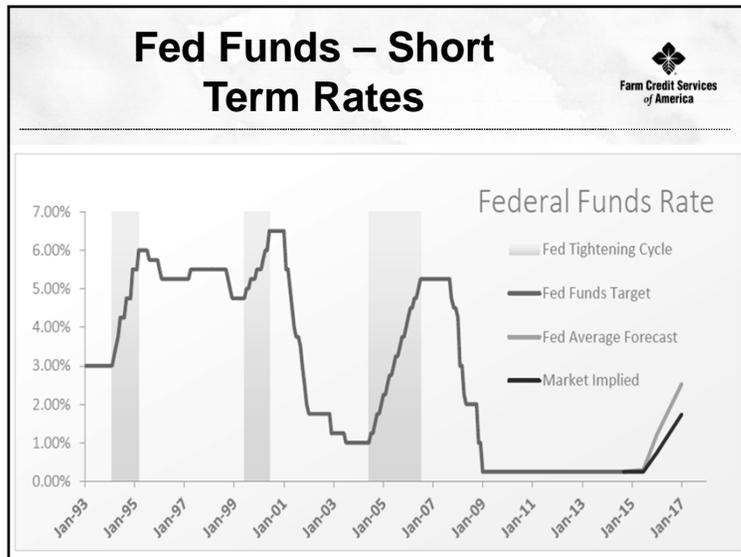


INTEREST RATES

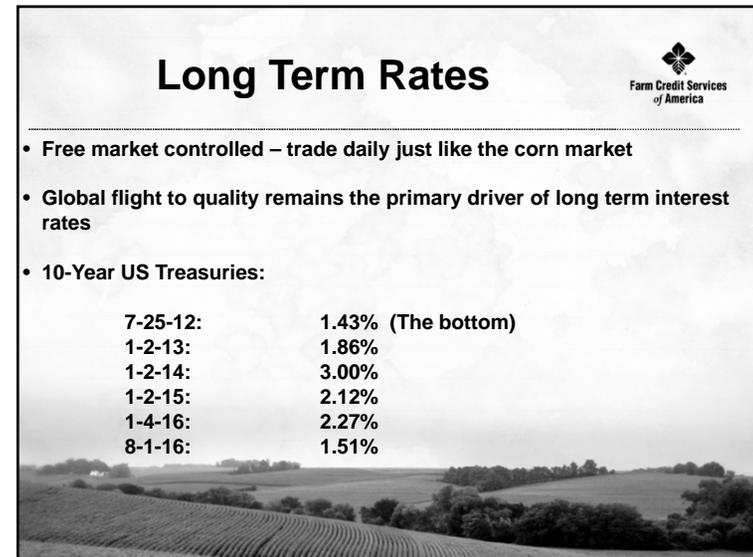


Short Term Rates

- Federal Reserve controlled
- First rise in interest rates in 9 years
- Anticipate modest increases in 2017-18
- Fed action will impact variable rate debt
- Primarily – Operating Line of Credit



Fed Funds – Short Term Rates

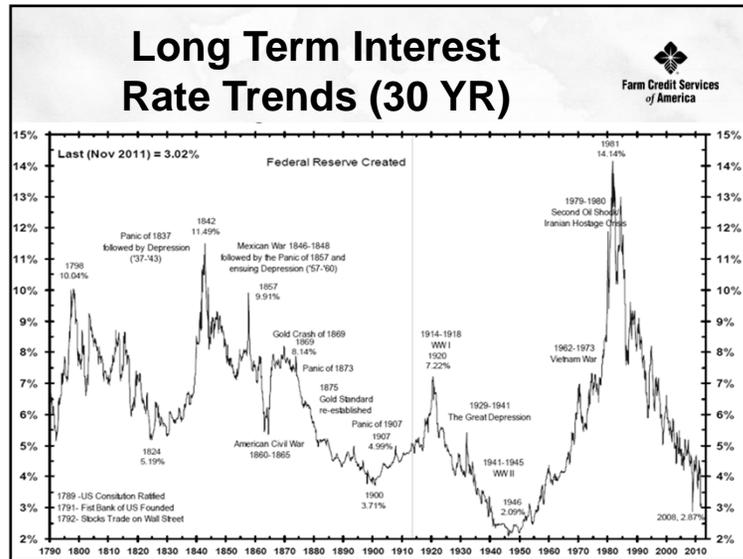


Long Term Rates

- Free market controlled – trade daily just like the corn market
- Global flight to quality remains the primary driver of long term interest rates

• 10-Year US Treasuries:

7-25-12:	1.43% (The bottom)
1-2-13:	1.86%
1-2-14:	3.00%
1-2-15:	2.12%
1-4-16:	2.27%
8-1-16:	1.51%



Interest Rates

- Keep perspective in the current environment – interest rates remain a positive for agriculture
- Short-term rates are going from historic lows to very low
- Current interest rate environment still provides excellent opportunities for interest rate risk management

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Interest Rates

Current environment provides excellent opportunities for loan restructure/re-amortization to improve cash flow

If your cash flow is not working – it is the amount of your debt or the amortization of your debt (or both), not the cost

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The Ultimate Question

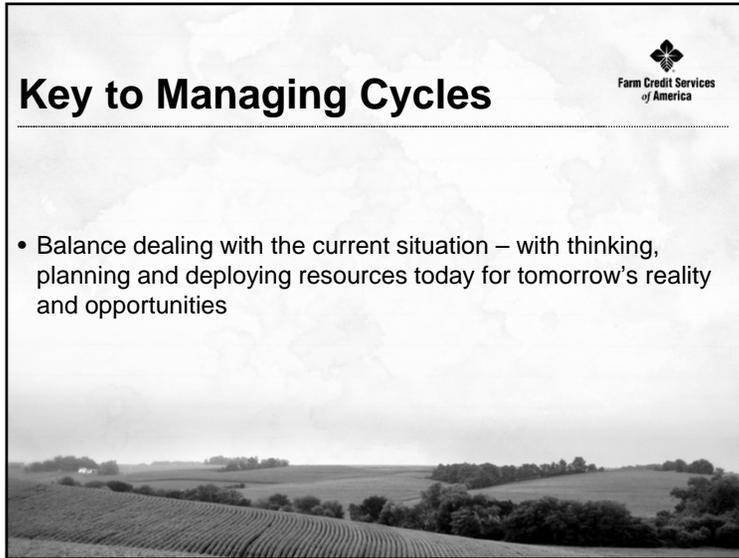
- How do you position your operation/business to withstand the challenges facing us today, yet take advantage of the opportunities that exist long term?

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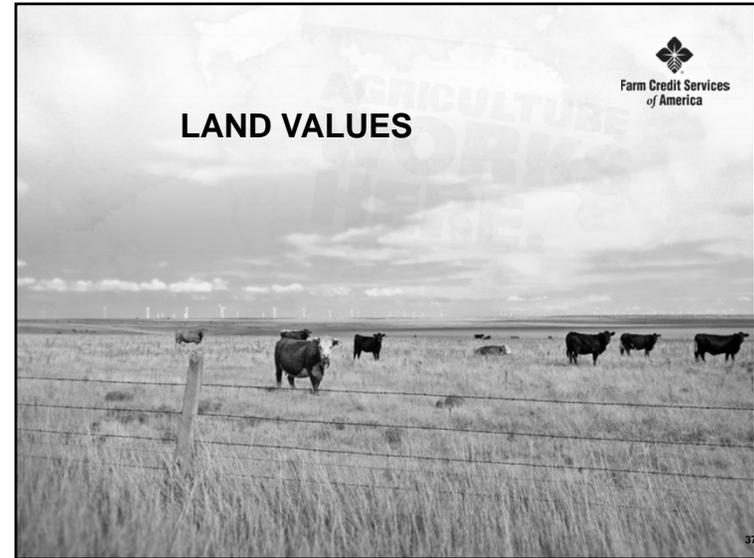
Key to Managing Cycles



- Balance dealing with the current situation – with thinking, planning and deploying resources today for tomorrow’s reality and opportunities



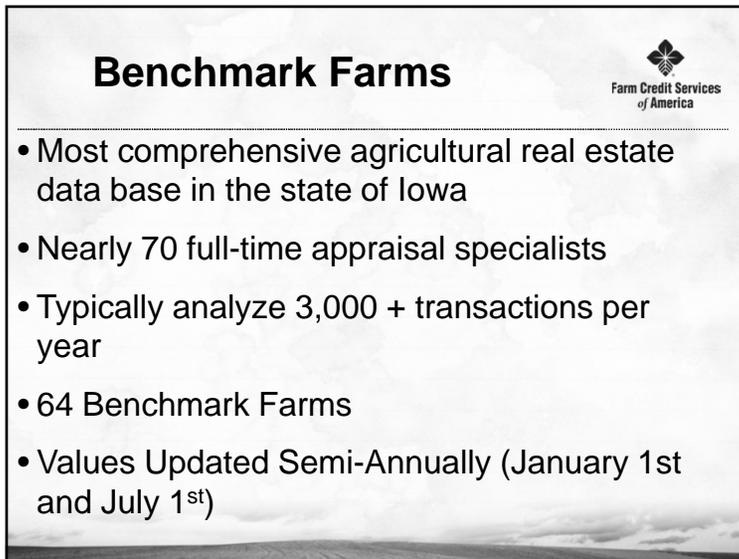
LAND VALUES

Benchmark Farms



- Most comprehensive agricultural real estate data base in the state of Iowa
- Nearly 70 full-time appraisal specialists
- Typically analyze 3,000 + transactions per year
- 64 Benchmark Farms
- Values Updated Semi-Annually (January 1st and July 1st)

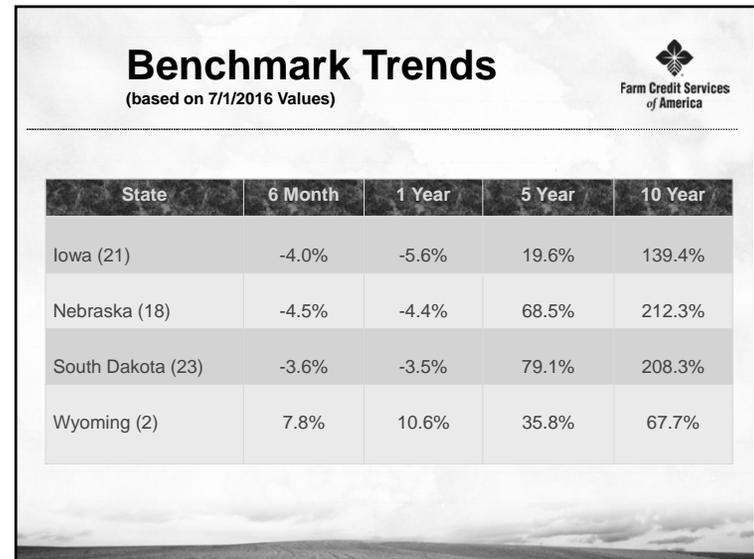


Benchmark Trends

(based on 7/1/2016 Values)



State	6 Month	1 Year	5 Year	10 Year
Iowa (21)	-4.0%	-5.6%	19.6%	139.4%
Nebraska (18)	-4.5%	-4.4%	68.5%	212.3%
South Dakota (23)	-3.6%	-3.5%	79.1%	208.3%
Wyoming (2)	7.8%	10.6%	35.8%	67.7%



Land Value Summary



- From the peak to today: Q2, 2013 – Q2, 2016
- Avg. Iowa Cropland: -20.1%
- 4 BM Farms in NW Iowa: -18%



Final Land Value Perspective

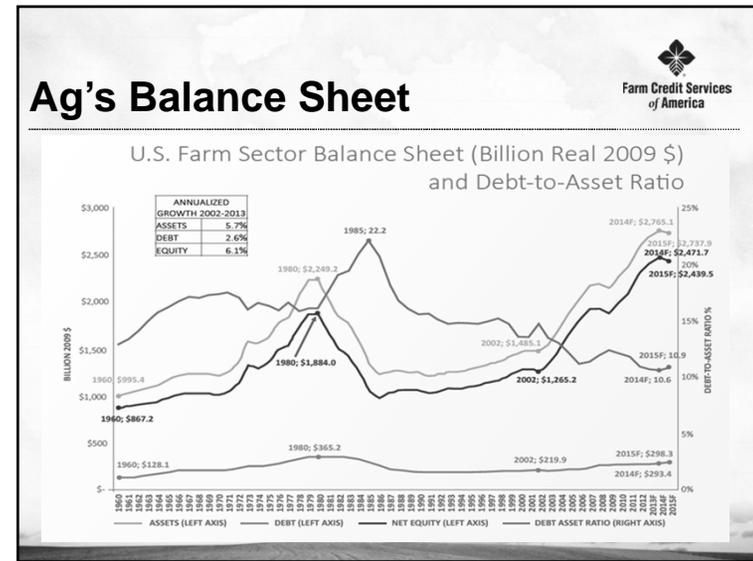


- Land values have declined modestly in 2015/16
- Positive land value support factors:
 - Lower supply of land for sale, low interest rates, excellent yields
- We expect land values to continue to react to lower grain production margins in 2016/17
- We expect the correlation disconnect between land values and grain production margins to narrow



AG OUTLOOK



Compared to the '80's



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1980s	TODAY
In 1979, 70% of the farm debt was held by approximately 30% of the farming operations. This 30% of the farming operations produced approximately 42% of the net farm income.*	In 2012, 68% of the farm debt was held by approximately 4% of the farming operations. This 4% of the farming operations produced approximately 48% of net farm income.*
In 1979, the percentage of farming operations with no debt was approximately 32%*	In 2012, the percentage of farming operations with no debt was approximately 75%*
Historically high interest rates. Prime rate in 1981 was 21%, and Fed Funds rate in 1981 was as high as 19%.	Historically low interest rates. Prime rate is 3.25%, and Fed Funds rate is 0.25%.
Most loans had variable interest rates	More use of fixed interest rates, with many borrowers having already locked in record-low rates
In 1983, total farm interest expense was approximately 150% of net farm income*	In 2012, total farm interest expense was approximately 14% of net farm income*

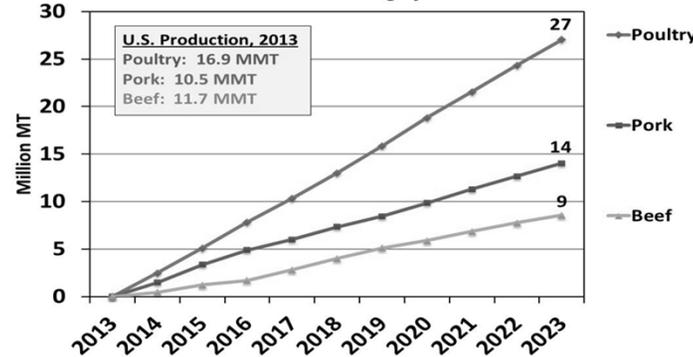
Livestock Industry Outlook



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World Meat & Poultry Consumption

cumulative change from 2013



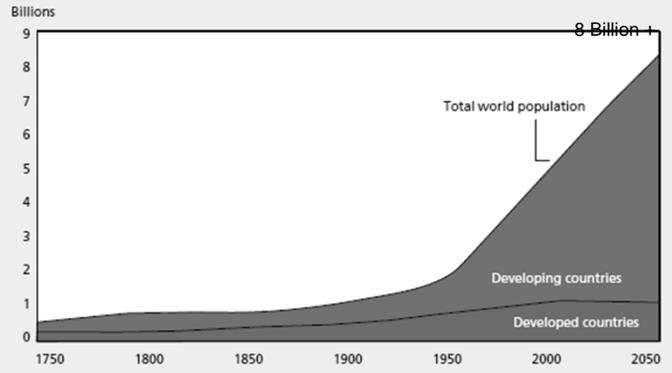
Source: UN/FAO, Agriculture Outlook to 2023

Reasons for Optimism: World Population Growth



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Figure 3.1 World population, 1750-2050



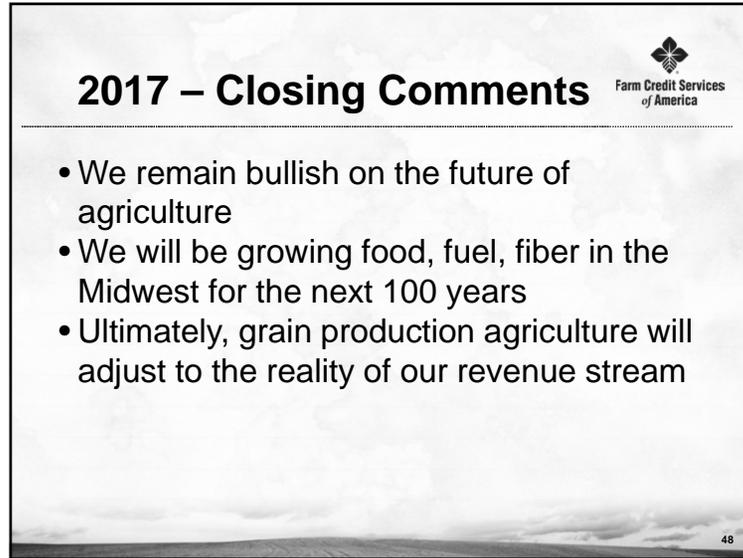
United Nations Projections



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- **Global food production will need to increase 40% by 2030 and 70% by 2050; beef and dairy production will need to DOUBLE by 2050**

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2017 – Closing Comments

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- We remain bullish on the future of agriculture
- We will be growing food, fuel, fiber in the Midwest for the next 100 years
- Ultimately, grain production agriculture will adjust to the reality of our revenue stream

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QUESTIONS?

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I-29 Moo University Dairy Beef Short Course Notes