Dairy Risk Management

May 30, 2019

Ceres Dairy Risk Management

Farm Needs

- ✓ Control costs
- ✓ Manage milk prices
- ✓ Provide simple & straight forward strategies
- ✓ Measurable results

Processor Needs

- ✓ High-quality reliable reporting
- ✓ Focused reporting that connects the dots
- ✓ Timely information
- ✓ Full service support

Consumer Products Needs

- ✓ Straight forward reports
- ✓ Content that answers why markets move
- ✓ Seamless integration
- ✓ Working to keep costs predictable & manageable

Agenda

- Understanding your milk check & returns
- So why do I need risk management?
- Mid-point check in & lunch
- What are the tools available to dairy farms?
- Risk management approaches
- Let's give it a try
- Wrapping it up

Milk Checks

Understanding the milk check & return objectives

The Influence of Price Discovery

The CME Spot Price.

Provides price discovery and a weekly average that can but used as a contract reference price, along with NDPSR, fixed prices and international references.

National Dairy Product Sales Report.

Sales for defined products where the price is established within 30 days of manufacturer are included in the reporting..

Convergence.

By design, the markets will converge allowing hedges to settle within expectations – adjusted for basis.

The Reference Price.

There are a variety of ways to price dairy products that include reference, basis, look back period.

Futures & Options.

The futures and options will, at times drive the spot markets, or price basis to spot. These contracts will settle to NDPSR.

Understanding cheese markets

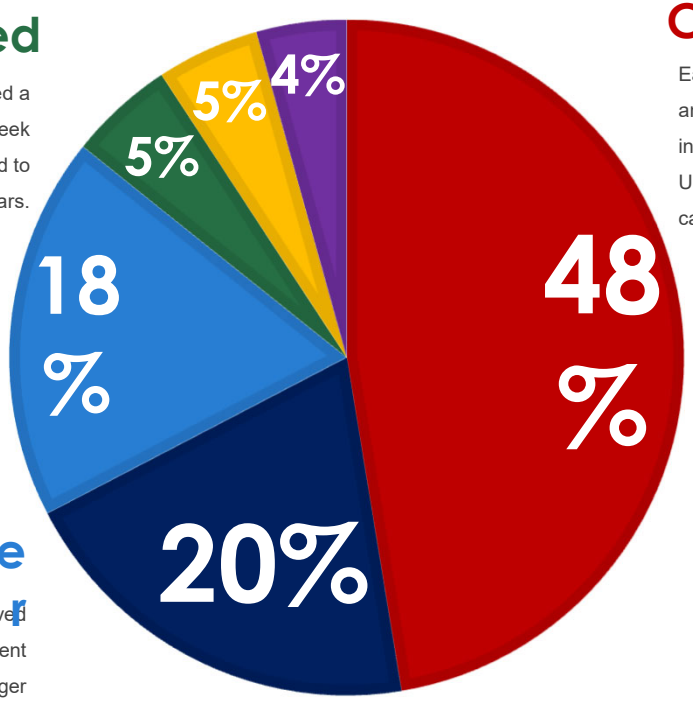
...helps explain milk checks

ceres

2017 U.S. Milk Solids Use

Cultured

While cultured products received a boost after the advent of Greek yogurt the category has started to slow in recent years.



Cheese/Whey

Each year more milk moves to cheese and whey processing with expectations in 2018 or 2019 half of the milk in the United States will move to this product category.

Butter/Powde

This category has received considerable interest in recent years with the significantly larger butter demand and strong U.S. exports.

Fluid milk

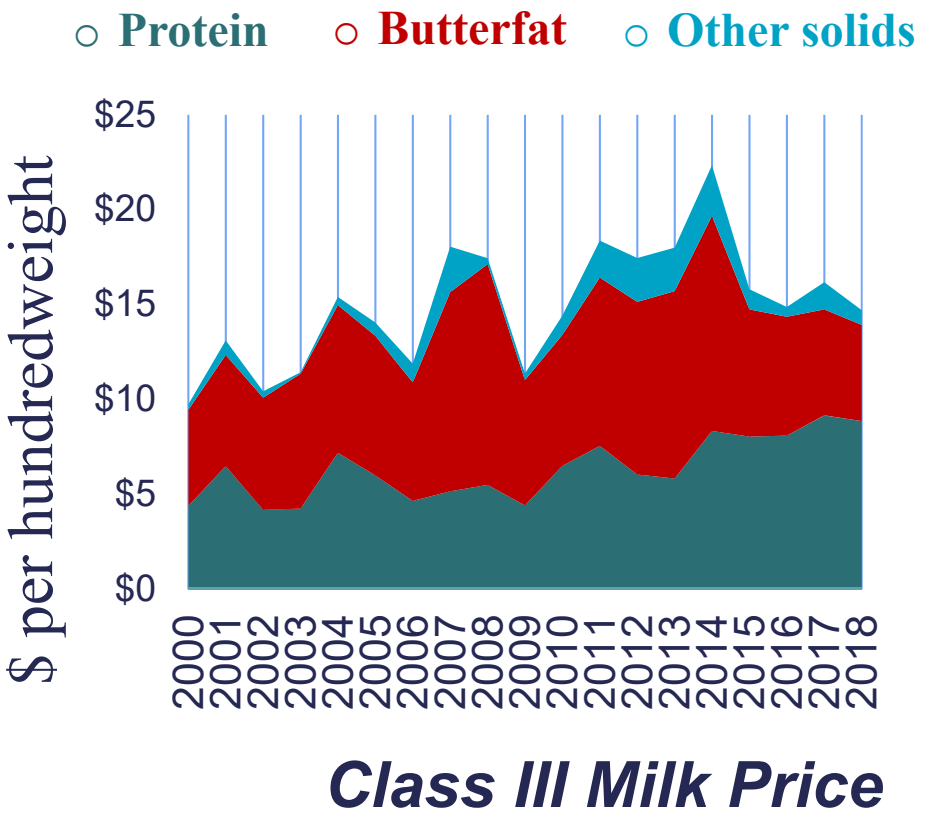
Fluid milk remains the second largest single category with cheese edging out this category. In recent years, fluid milk has received challenges from alterative beverages that continues to reduce consumption.

Butter packs a punch

- Between 2000 and 2013 butterfat contributed, on average $5.57/cwt. to the Class III milk price or 39% of the value.
- From 2014 to present butterfat has accounted for 52% of the Class III milk price contributing on average $8.49/cwt.
- This is no longer a U.S. phenomenon – European and Oceania dairy producers are seeing the same thing.
- But, for cheese makers the high cost of butterfat is challenging and can result in reductions to the Class III milk price as butterfat in cheese does not hold the same value as butterfat in butter. As cheese, butterfat was worth $6.97/cwt. between 2014 and 2018 – a $1.52/cwt. difference.

Source: AMS

The market proxy:
Cheese = Protein (41%)
Butter = Butterfat (52%)
Sweet whey powder = Other Solids (7%)

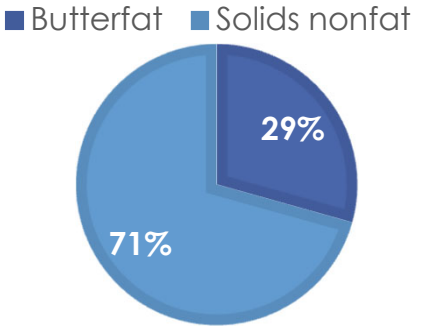


Class III Milk Price

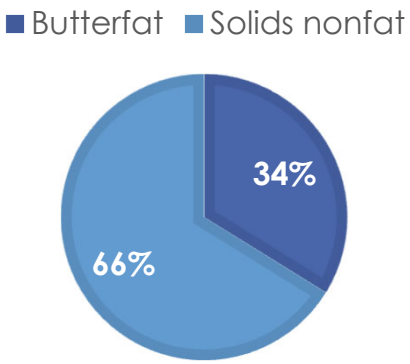
It's biology –

only one-third of milk solids are butterfat

HOLSTEIN



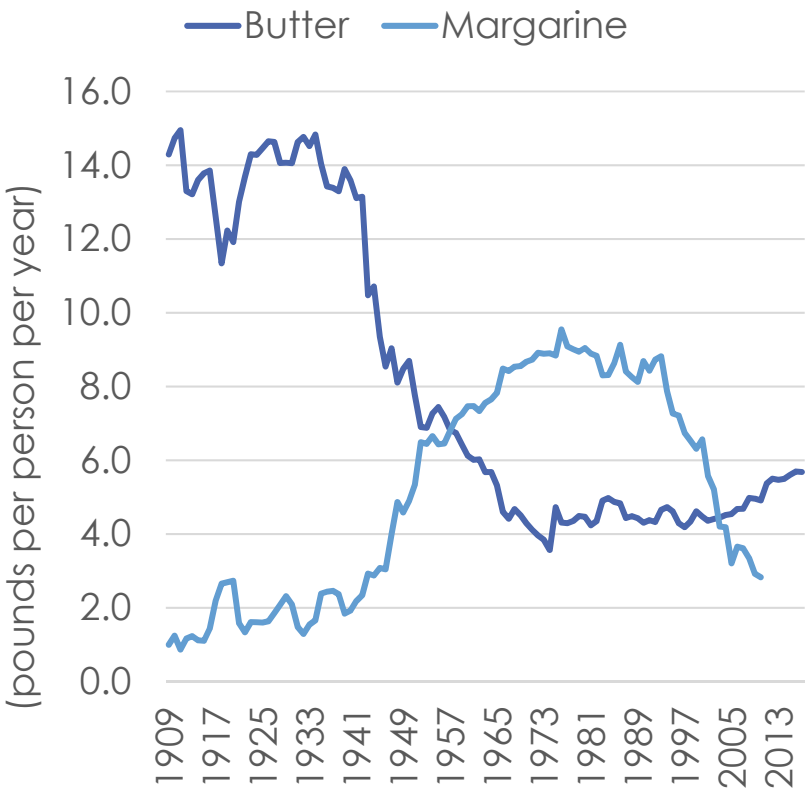
JERSEY



2015 Components	Holstein		Jersey	
Butterfat	3.67%	28.9%	4.81%	34.7%
Protein	3.08%	24.5%	3.65%	25.4%
Other solids	5.76%	46.6%	5.76%	39.9%
Total Solids	12.4%	100%	14.4%	100%

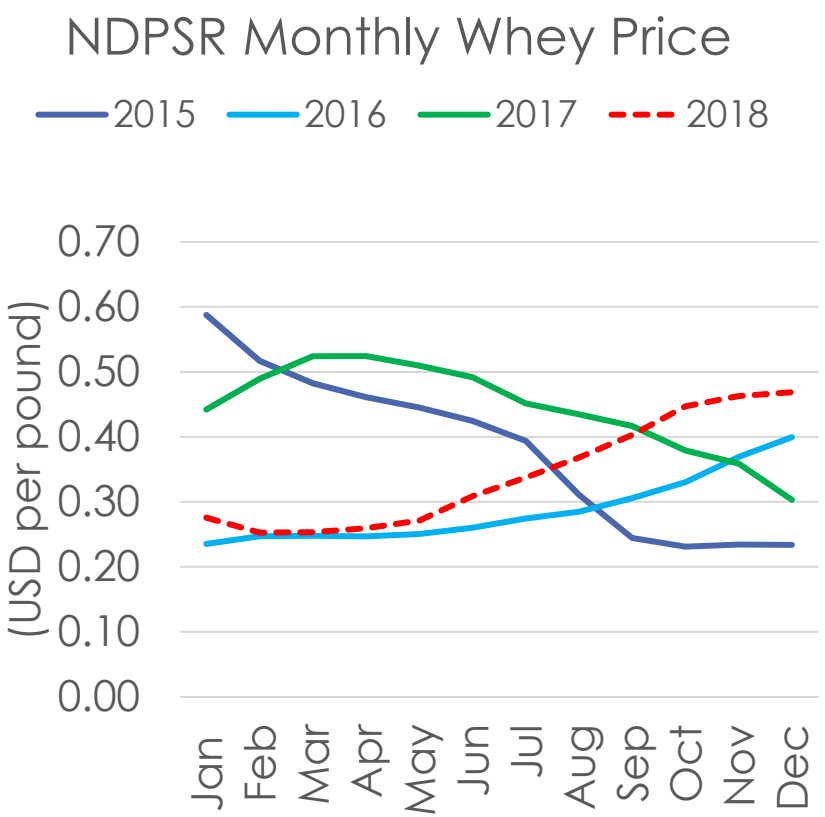
Source: ERS Per Capita Dairy Product Consumption, Sept. 2018; Holstein Association USA, Inc.

U.S. Butter vs. Margarine Per Capita Consumption

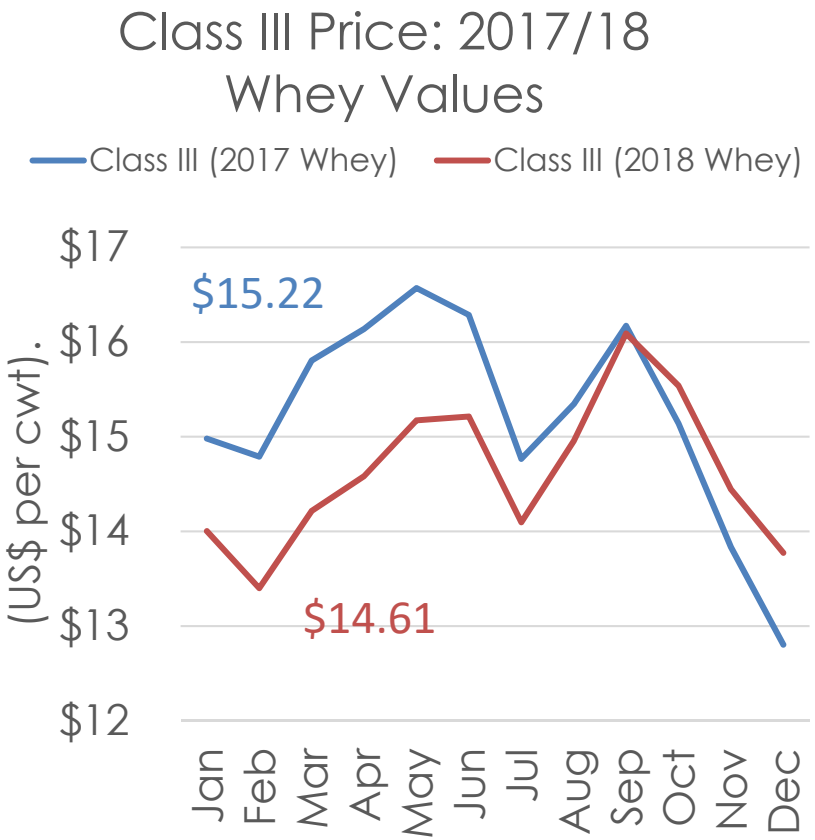


Whey impacts the Class III price

1-cent in whey = 6-cents Class III milk



Source: AMS NDPSR Announced Prices



Understanding Costs at All Levels

Knowing all farm costs are important

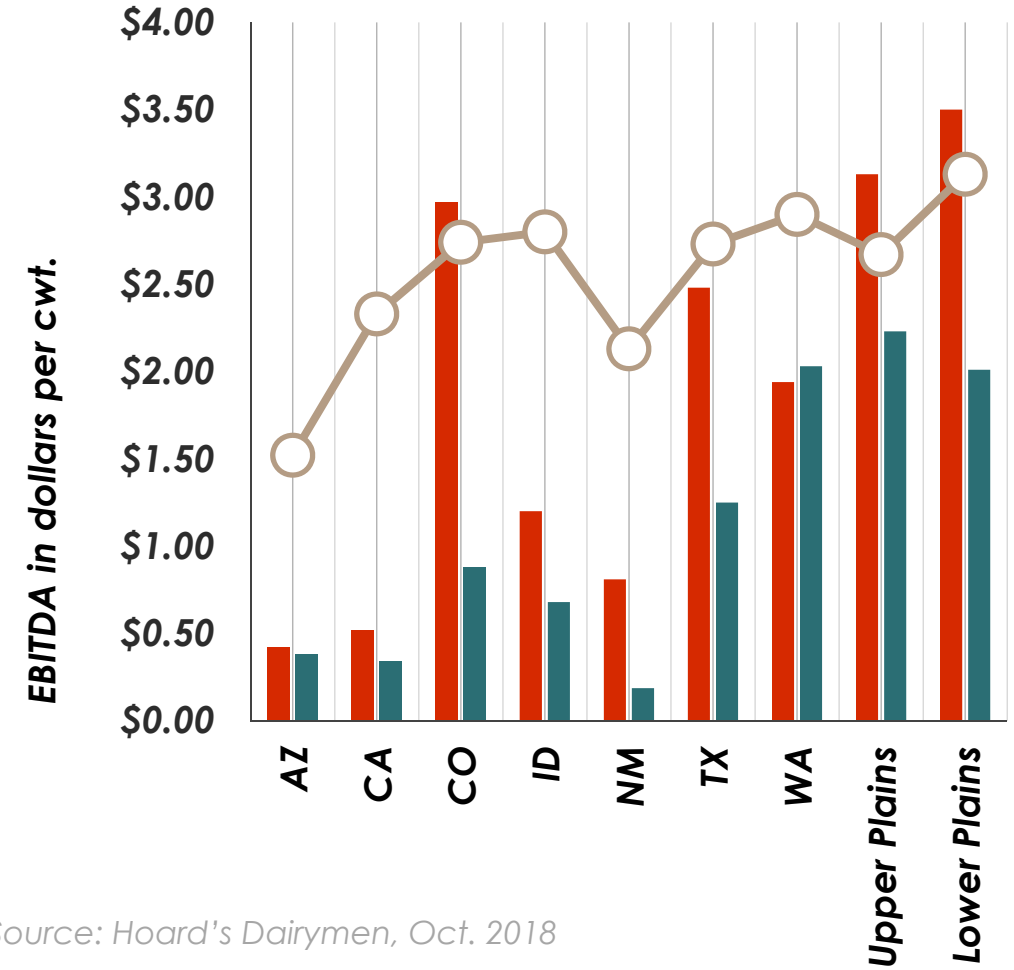
Feed

Other On-Farm

Transportation

On farm costs are rising

Other costs (interest, labor, compliance) are higher and cutting into farm returns



Source: Hoard's Dairymen, Oct. 2018

EBITDA

- **2015**

Profitability was mixed this year and tended to favor cheese vs. powder milk as the world struggled with over supply.

- **2016**

Cheese markets were relatively strong in 2016, but milk powder markets struggled given the amount of product from Europe.

- **2017**

Milk price recovery in 2017 helped to lift EBITDA throughout the West and Midwest.

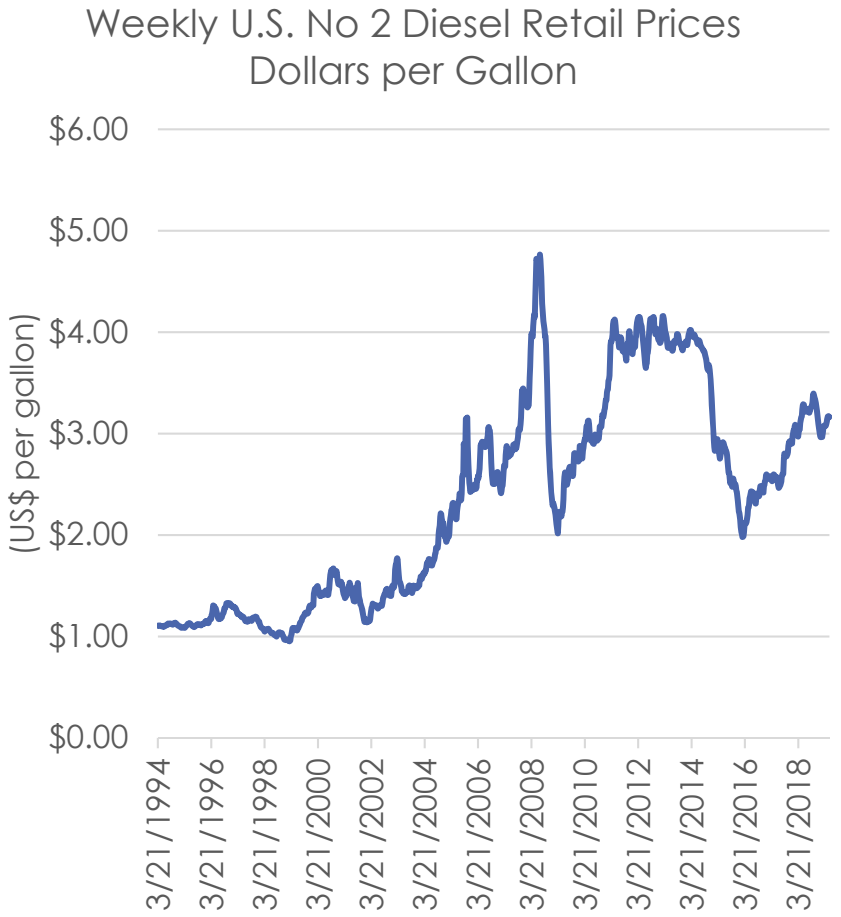
Feed Costs are on the Rise

Weather, trade and African swine fever are concerns

- On-farm economics are shifting as wet weather, trade and African swine fever are combining to drive market recovery.
- Higher operational costs along with feed prices on the move after a cold and wet winter could keep farm costs higher and appetite for growth limited – at least for now.

#2 Diesel on the Rise

- The U.S. Energy Information Administration #2 Diesel week price is on the rise again. That said, prices this week are 3.5% below the same time last year.
- Higher fuel costs could impact fuel surcharges for raw milk, fluid products and finished products.
- There is some momentum for states in allow for larger tankers to move milk – that could help mitigate rising costs.



What does the federal order regulate?

The federal order system regulates the movement of raw milk from farm to plant and plant to plant as well as fluid transfers between plants.
It works to establish a price that processors pay to farms in the marketing area.

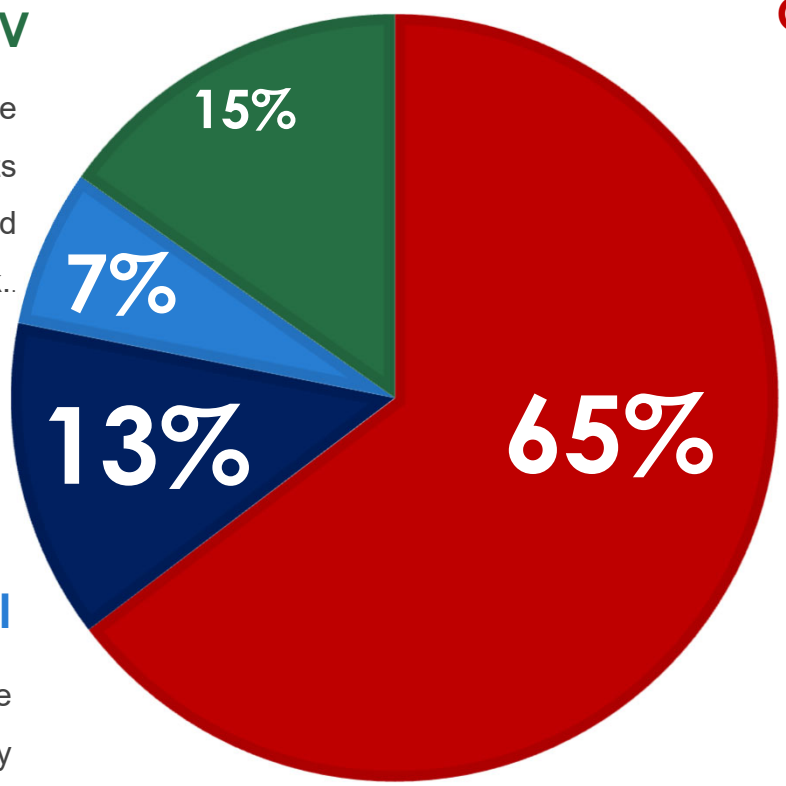
Federal Order #5

How the milk price functions

ceres

Class IV

Class IV tends to be the lowest price so this reflects the value of butter and nonfat dry milk..



Class I

Since May, the Class I skim price is the average of the advanced Class III and Class IV milk price plus $0.74/cwt.

Class II

The Class II price is based on the Advanced Class IV price plus $0.70/cwt.

Class III

Class III represents the value of cheese and whey

So what does this mean?

Milk Price (April 2019)	Unit Value	Ext. Price
Uniform Price		
Skim	$9.65	$9.30
Bfat (3.7%)	$2.5610	$9.48
Gross milk price		$18.78
(less) check off	$0.15	-$0.15
(less) mkt fee	$0.35	-$0.35
(less) xport	$1.50	-$1.50
(less) xport	$0.75	-$0.75
Net milk check		$16.03

Income Statement	Ext. Price
Milk revenue	$16.03
Feed costs	$8.65
Milk over feed	$7.38
Replacement costs	-$1.75
Interest expense	-$0.78
Depreciation	-$0.69
Labor	-$1.25
Other (ex. heifer raising)	-$2.50
Net milk check	$0.41

Breaking down income

Manage the controllable, minimize everything else

ceres

Out of farm control
Markets

Milk-over-feed is largely market driven and needs to be managed to provide sufficient funds to cover the cost of operation.

In farm control
Quality • Yield • Costs

Operating costs are primarily within the control of the farm; however, unmanaged milk-over-feed costs can affect these costs.

Income Statement	Ext. Price
Milk revenue	$16.03
Feed costs	$8.65
Milk over feed	$7.38
Replacement costs	-$1.75
Interest expense	-$0.78
Depreciation	-$0.69
Labor	-$1.25
Other (ex. heifer raising)	-$2.50
Net milk check	$0.41

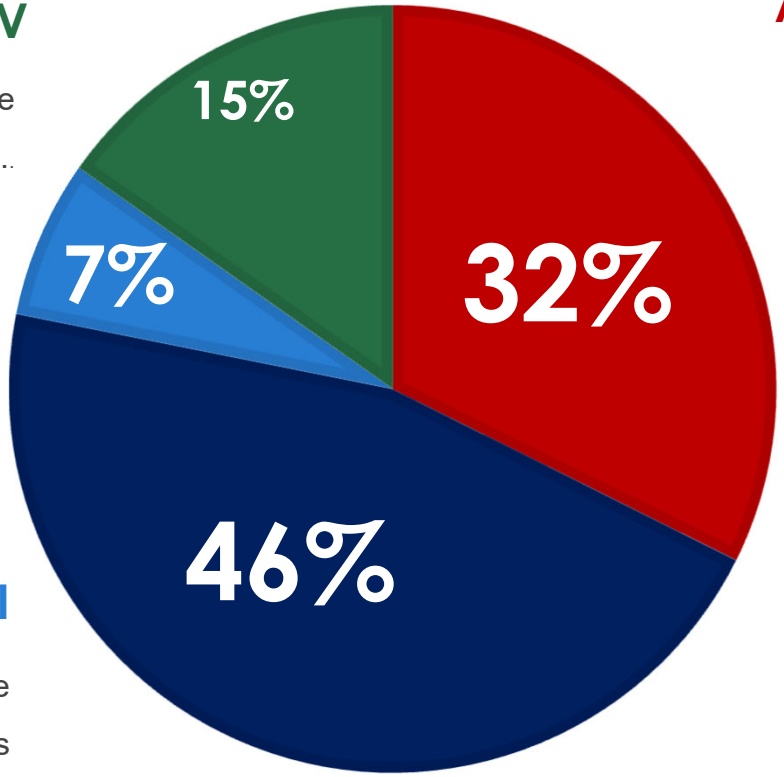
Federal Order #5

Hedging is 61% Class IV – 39% Class III

ceres

Class IV

Class IV represents the current month futures..



Advanced Class III

Advanced prices need use the prior month for hedging – to Hedge July producers would use June Class IV contracts

Class III

Class III represents the current month futures

Advanced Class IV

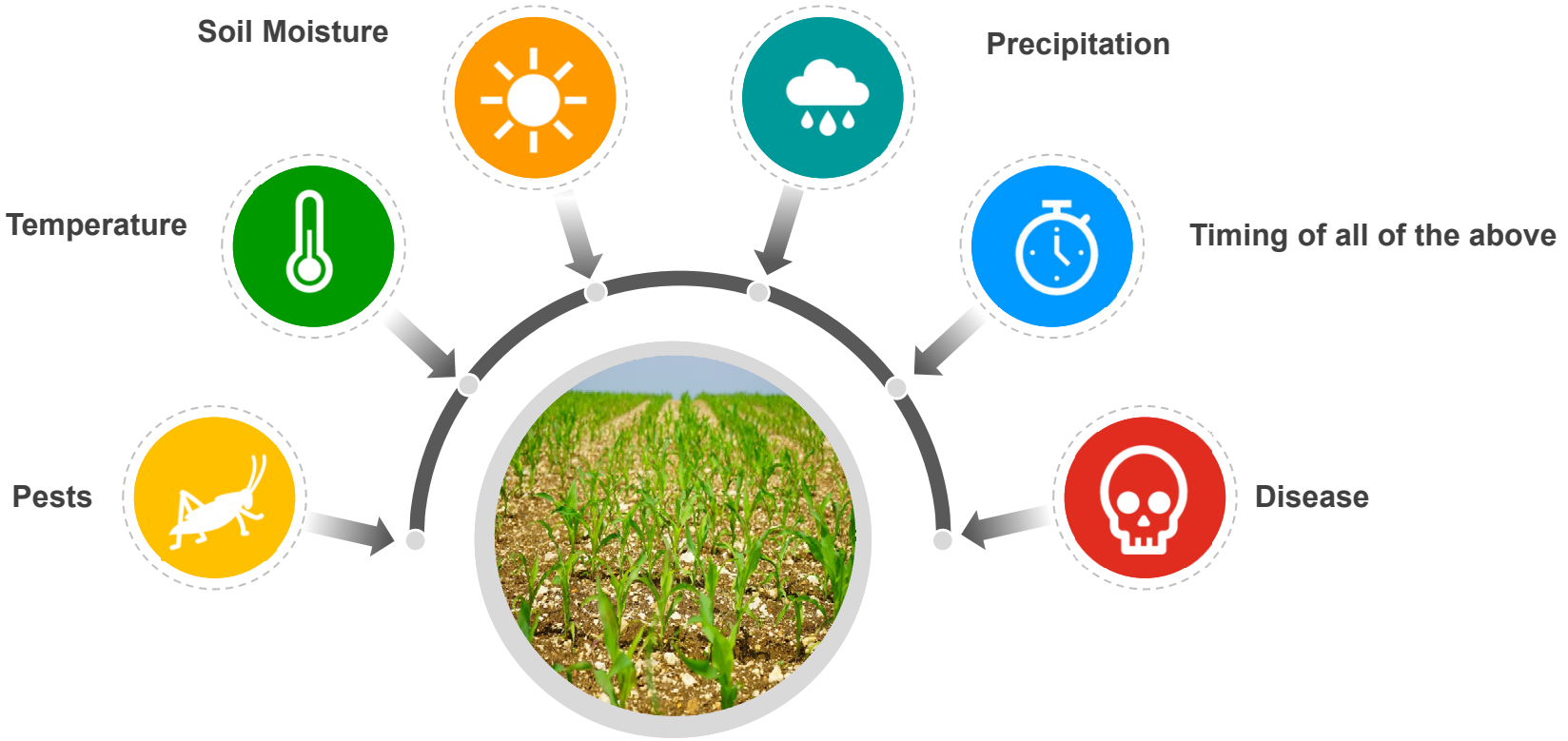
Advanced prices need use the prior month for hedging – to Hedge July producers would use June Class IV contracts

Risk Management

What is it & how does it work? Why do I need it?

Let's talk about crop yield

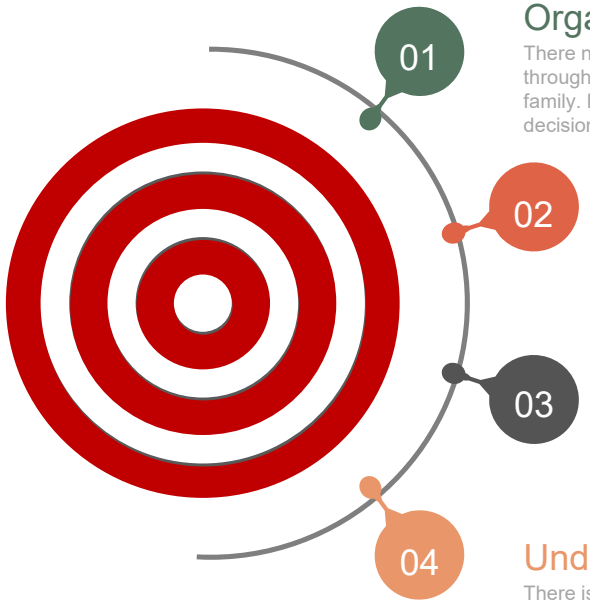
There is a lot of uncertainty…



…but that doesn't stop planting

Dairy risk management

is a tough business



Organizational buy-in

There needs to be organizational buy-in throughout the company and within the family. Risk management must be built into decision making and planning efforts.

Discipline is a must

A good risk management program is structured and systematic. That is essential to providing stability in earnings and a counter-balance to market uncertainty.

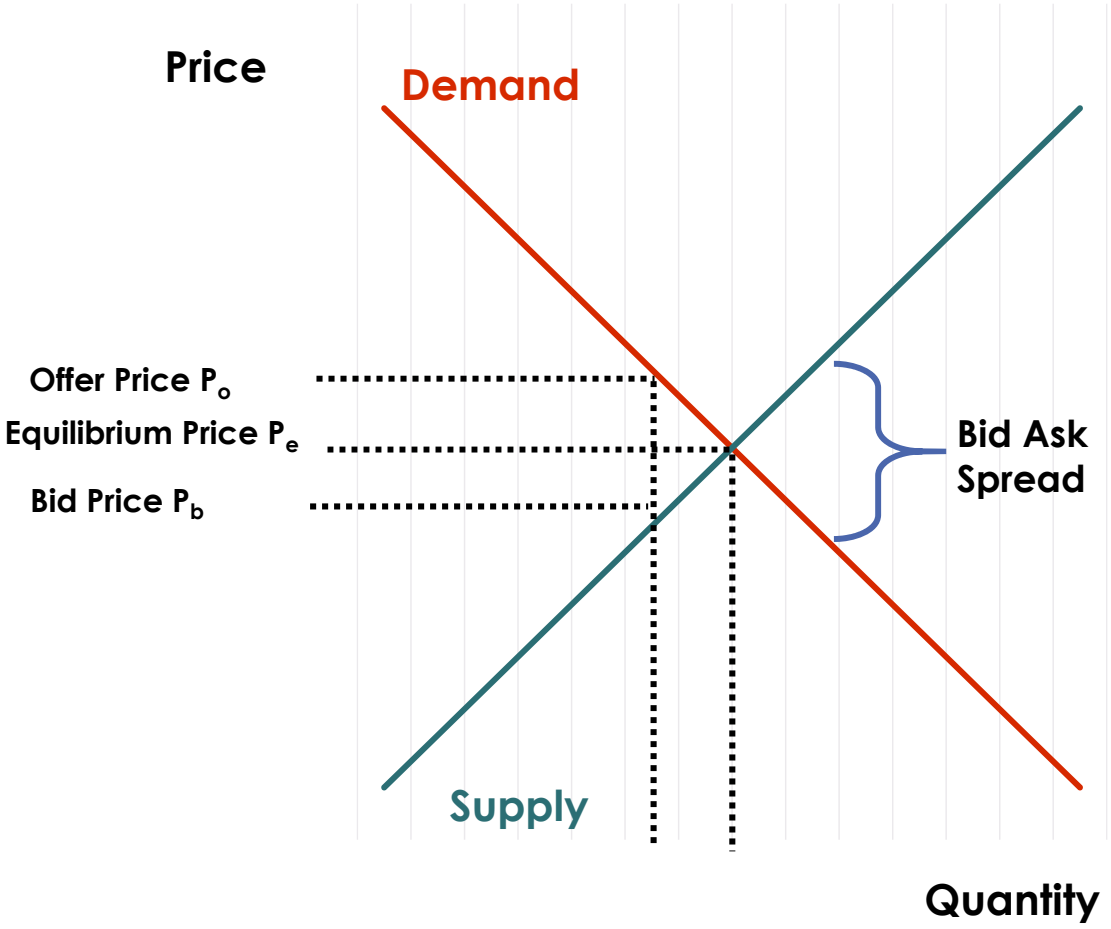
Intelligent decision making

Risk management is iterative, dynamic and responsive to change. Varying market conditions and changing competitive environment will require modification.

Understand the tools

There is no-cookie cutter approach to managing a company's risk as the objectives and risk tolerances are different.

Why Do Markets Rely on Price Discovery?



Purpose of price discovery

Definition #1

The process of determining the value of a commodity in the marketplace based on the interaction between buyers and sellers.

- **Definition #2**

"The overall process, whether explicit or inferred, of setting the spot price." - Investopedia

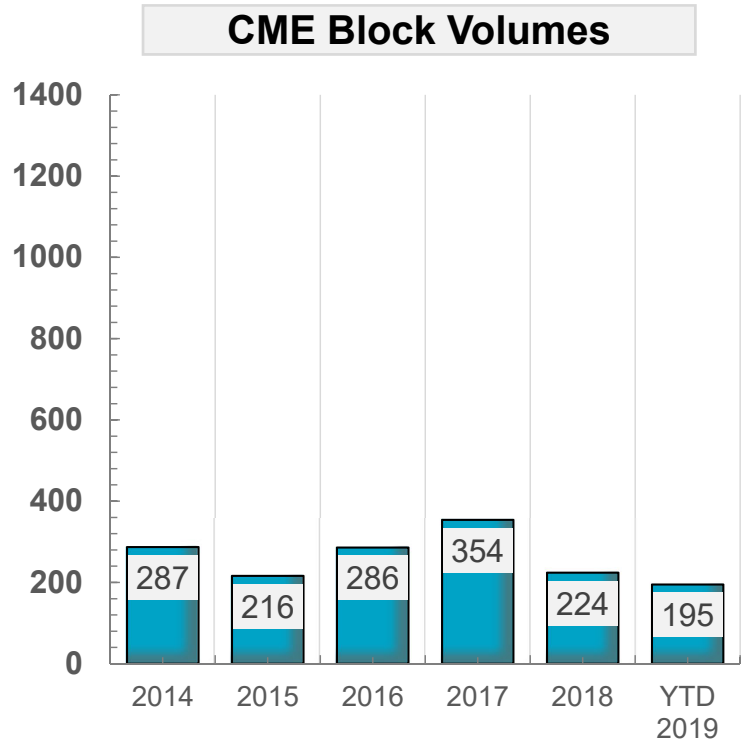
- **Definition #3**

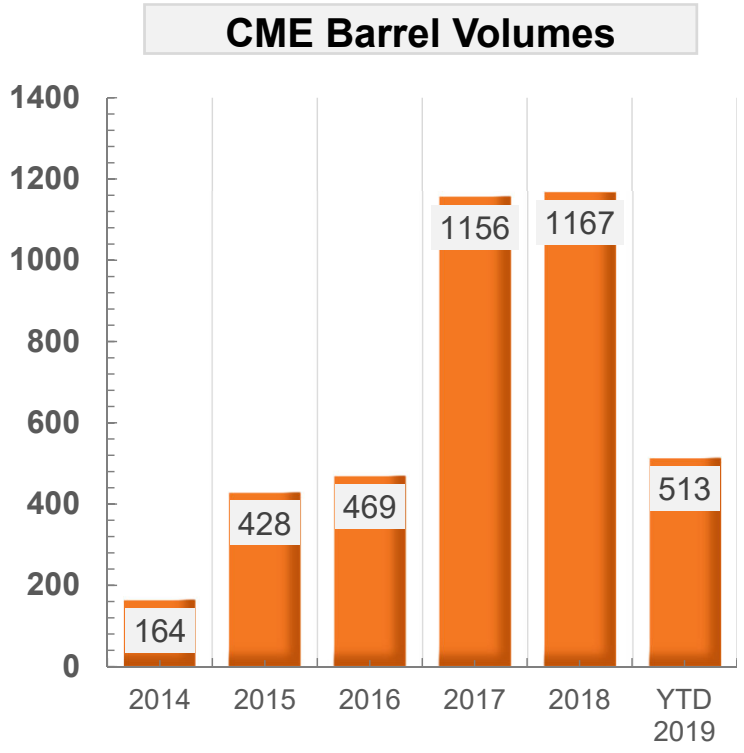
"Price discovery is the mechanism by which competing buyers and sellers determine the price of a security or an asset. Typically, this is done on an exchange." – *The Wall Street Journal*

Price is Important, but…

It is just one part of the story; part two is the relationship

- December 2016 new barrel capacity added.
- July 2017 electronic trading begins.

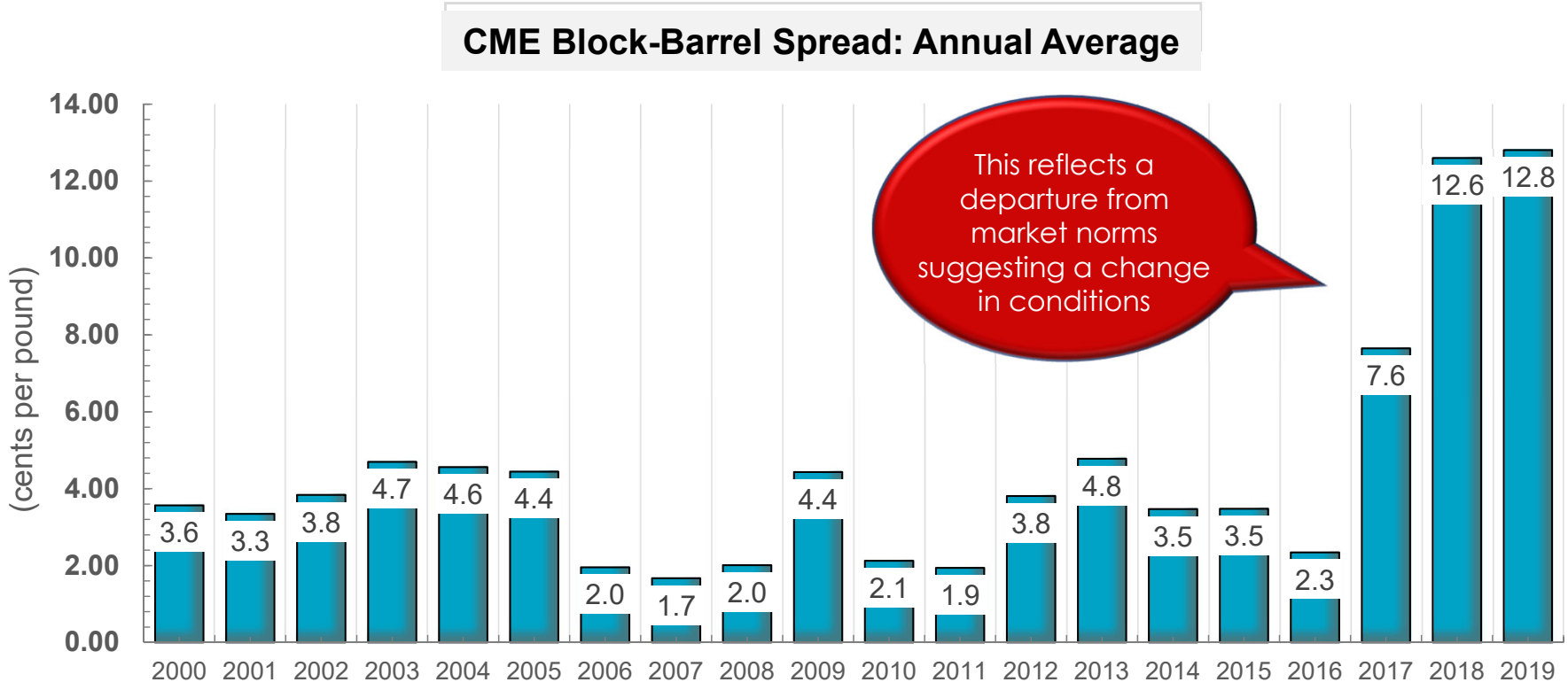




Source: Dairy Market News/ CME Group

The Block-Barrel Spread Widens Out

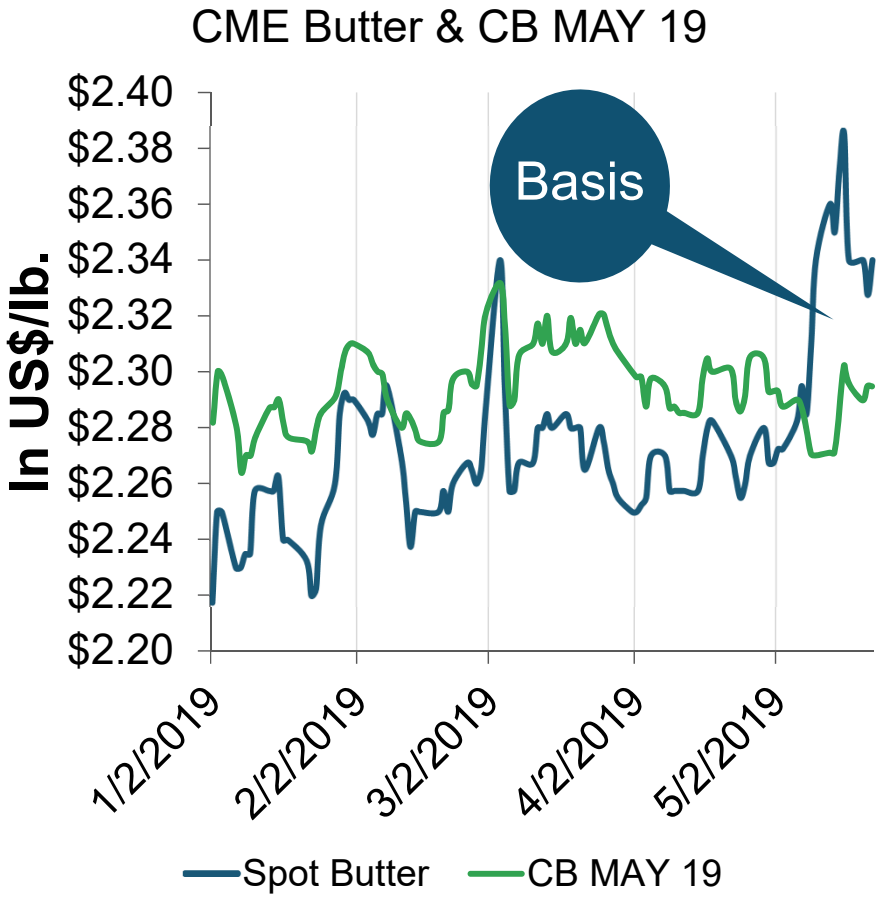
- Between 2000 – 2016 the spread averaged 3.21¢
- Between 2017 – 2018 the spread averaged 10.12¢
- YTD 2019 – the spread averaged 12.81 ¢



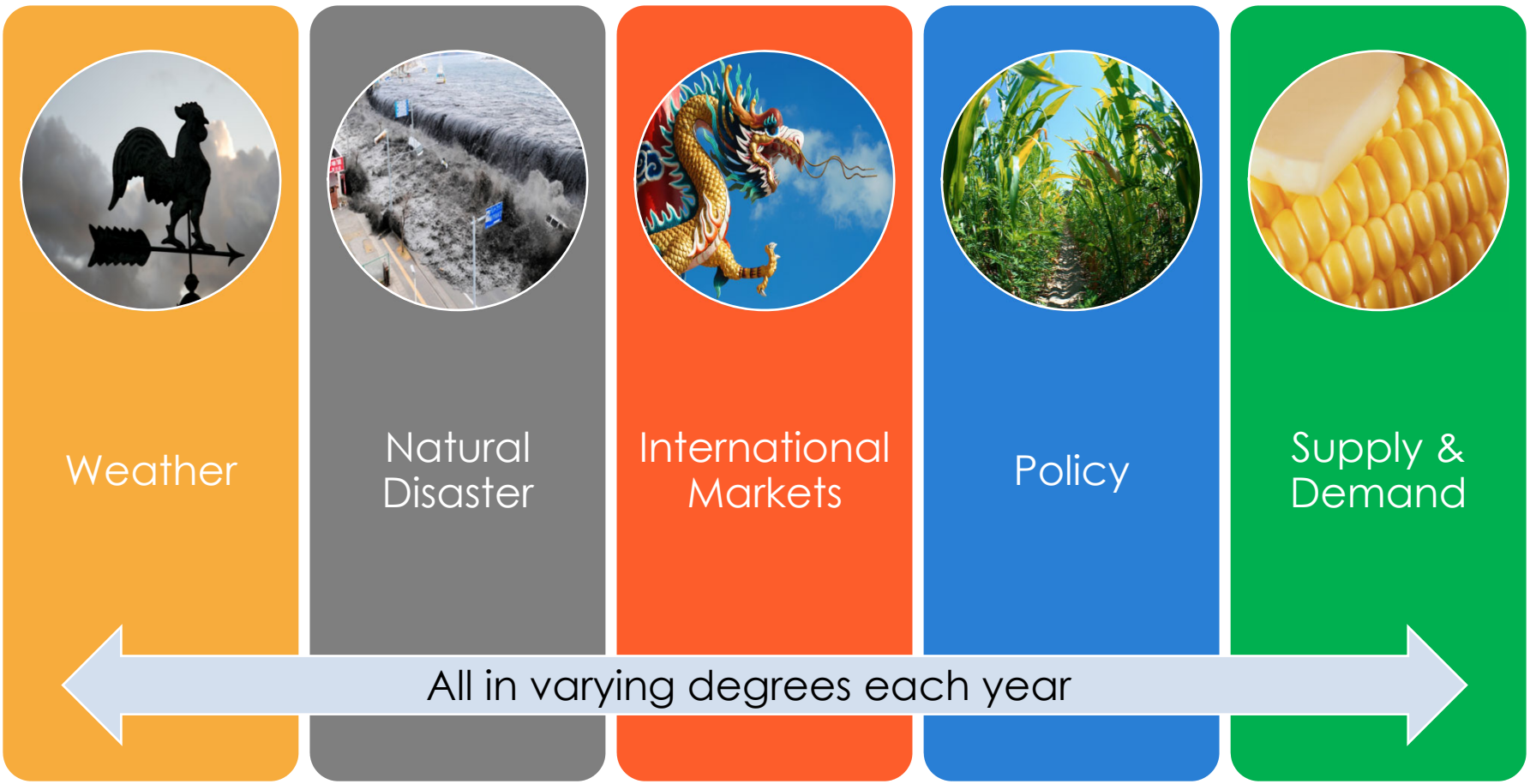
Source: Dairy Market News/ CME Group

What Causes Differences Between Cash & Futures?

- It's Basis!
- $Basis = Cash - Futures\ price$
  - It is the risk that futures will not correlate with the underlying cash market.
  - Basis will expand and contract over the life of the hedge.
  - Most traders and hedgers want to know the basis for arbitrage or to understand the risk in their hedge.
  - Typically basis cannot be managed, but it still must be understood.



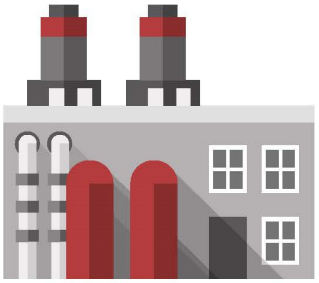
What drives markets?



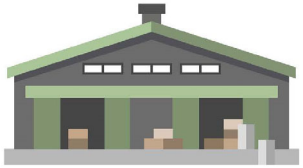
Stocks reflect the imbalance in the system

FARM MILK

DAIRY PRODUCT OUTPUT



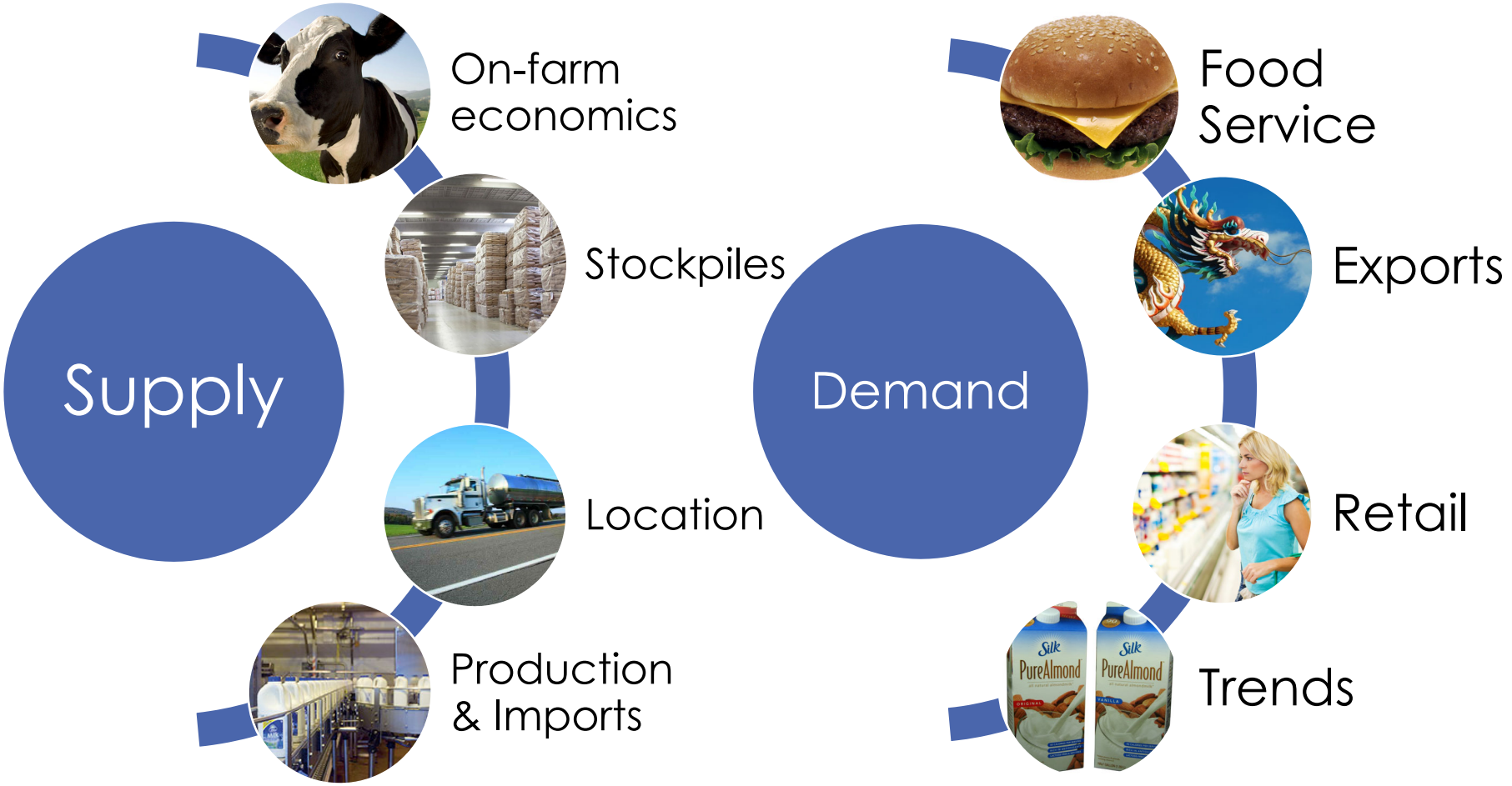
DEMAND



STOCKS

Excluding working inventory, if the system is perfectly in balance there would be no stocks. If there is a surplus stocks exceed working inventory. When there is insufficient milk to produce dairy products stocks are depleted.

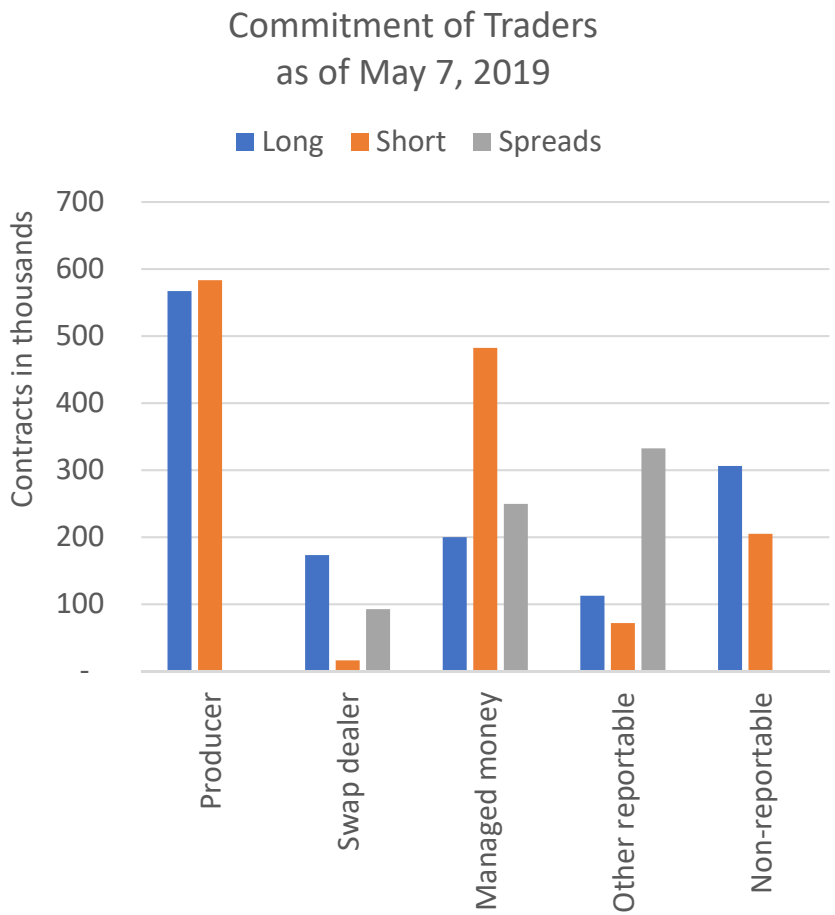
Unpacking Dairy Supply & Demand



Speculative traders are short

That could have implications if markets increase

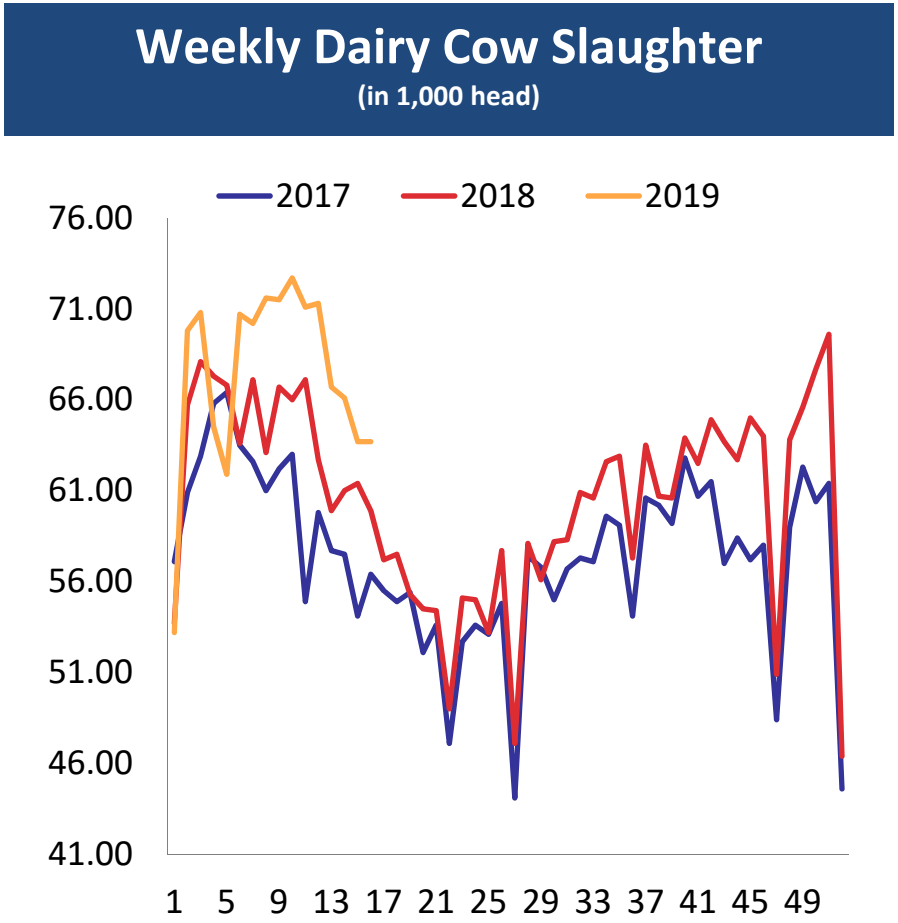
- As mentioned last month, market sentiment is shifting as weather takes center stage displacing, for now, escalating trade concerns.
- As speculative traders look to reposition or exit their shorts they could cause markets to rally for a bit before settling back down.
- That could cause a disconnect for "basis" and that could be beneficial for farms.



The pace of slaughter high

…will it continue into the summer?

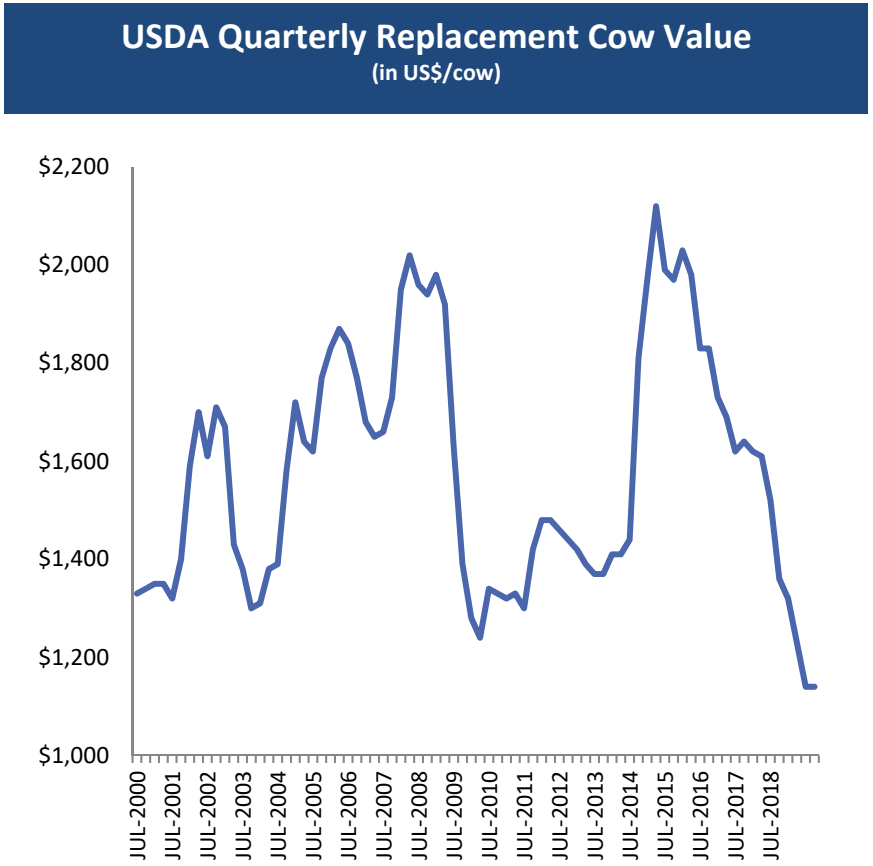
- As cow slaughter remains elevated some slaughter houses are reporting lack of capacity to process. Markets may be misinterpreting the data.
  - There are anecdotal reports of appointments set weeks in advance.
  - In some instances, operations are particularly choosy about the animals headed to slaughter and have been turning some away.
  - The lack of capacity could keep the pace of slaughter unseasonably high as the summer approaches.
- Cull cow values are increasing.



Dairy cows are cheap

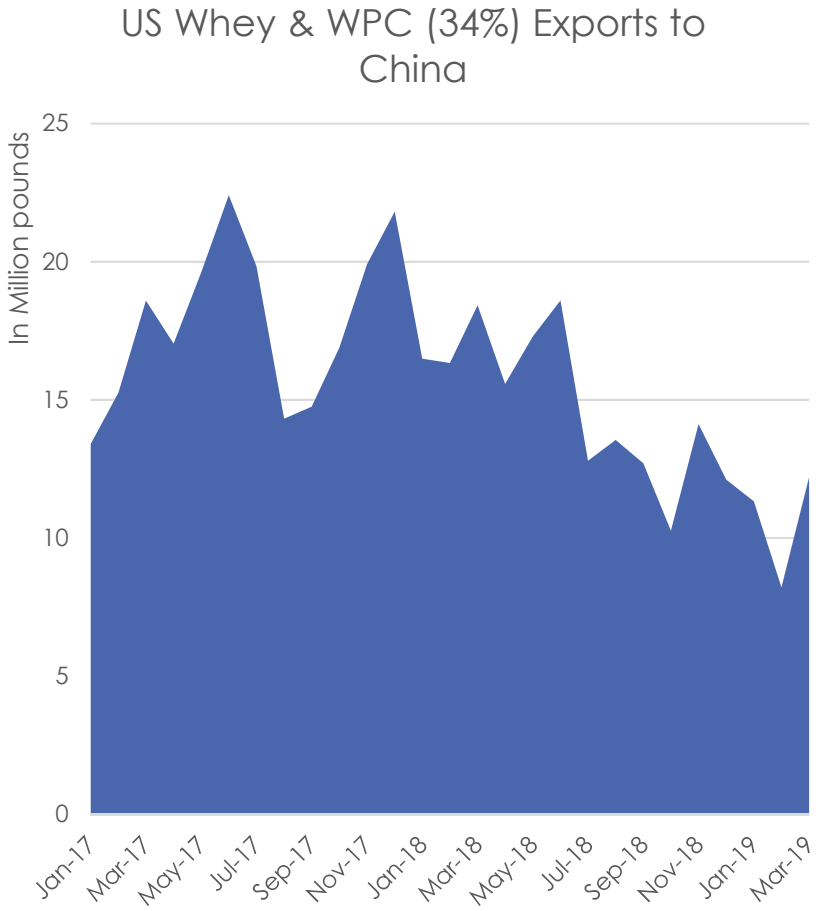
…and getting cheaper at the start of 2019

- Replacement cow values dropped to $1,140/cow this year – the lowest value since 1998.
  - The lowest values were in Virginia $975/cow where farms have been exiting dairying at a quickened pace.
  - Kansas had the highest average value at $1,300/cow. Oregon and Texas were close seconds with values of $1,275.
  - Minnesota: $1,180/cow
  - Wisconsin: $1,125/cow



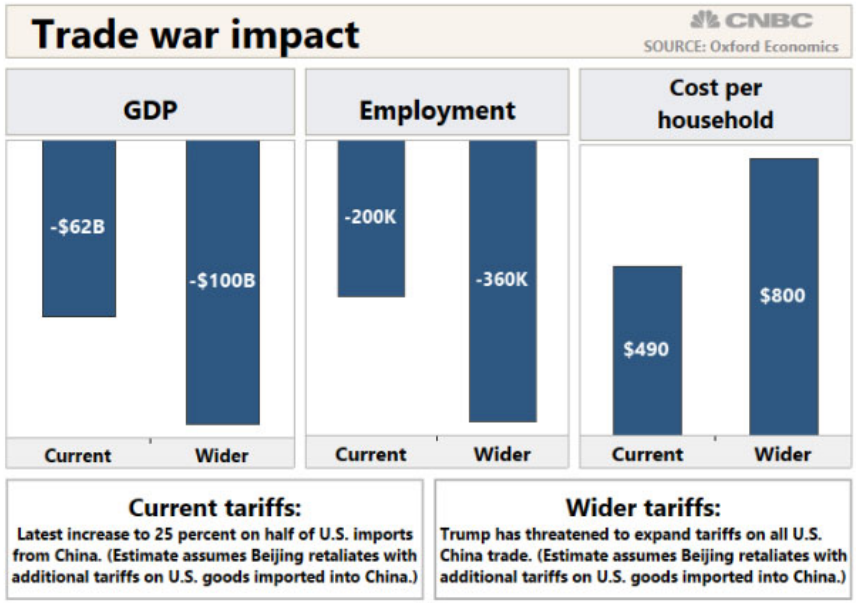
African swine fever

- African swine fever (ASF) is having mixed impact on markets.
  - Presently ASF is spreading, causing countries to cull more pigs to contain the disease. Estimates are that the world could lose 30-40% of its hog herd this year.
  - That is lifting pork and beef futures.
- Given the global protein shortfall, that event could support higher cheese, NDM and milk prices this year.
- At the same time, ASF is depressing whey powder, lactose and permeate prices.



Trade dispute worsens

- The United States stepped up its pressure on China last week announcing a new round on tariffs by increasing tariffs to 25%, up from 10%, on another $200 billion in goods.
  - Estimates suggest the latest round of tariffs could increase the cost to U.S. households from $490 to $800.
  - That could put a drag on the U.S. economy.
- China retaliated increasing its tariffs and expanding the list of affected products.
  - Dairy had few impacts with lactose moving from 15% to 20% and infant formula moving from 15% to 30%.
  - Pork was not impacted.
- During the first week of May, the European Union announced that agriculture would not be part of any trade negotiations.
  - Senator Chuck Grassley, Iowa-R stated that was a non-starter.
  - As of May 15, the Trump Administration will post-pone auto tariffs by up to six months according to CNBC.
- USDA is exploring new rounds of subsidy but that was not well received by farms and unlikely to have much impact for dairy using last year's payments as a baseline.

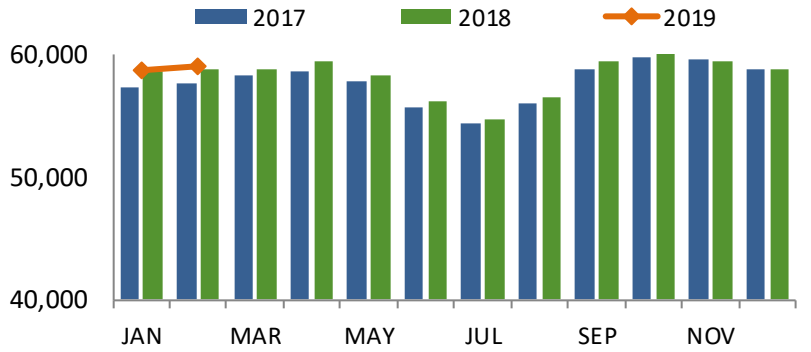


Global milk production flat

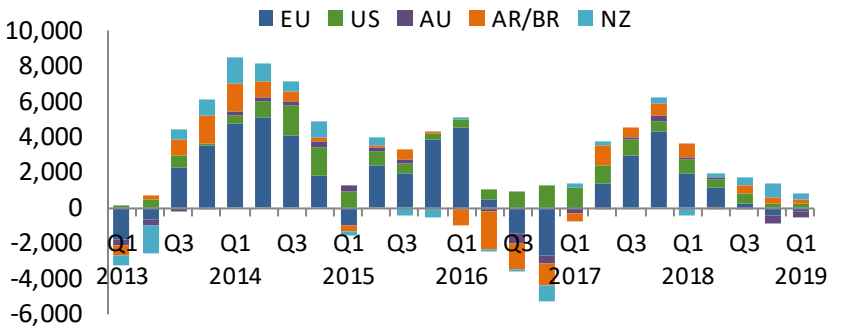
Milk production remains flat as some recover and other falter

- In February, the major exporting countries and Brazil produced 0.33% more milk than last year.
  - The Southern Hemisphere is headed into the end of season quickly as Australia, and Argentina fall below prior year levels and New Zealand output in February flatlines.
  - Europe broke a five-month losing streak when Eurostat reported February milk output +0.1%
- As milk output falters and demand remains robust price are starting to rise as some become concerned about supplies later this year.

Milk Production (AR,AU,BR,EU,NZ,US)
(30-day month, in million lbs.)



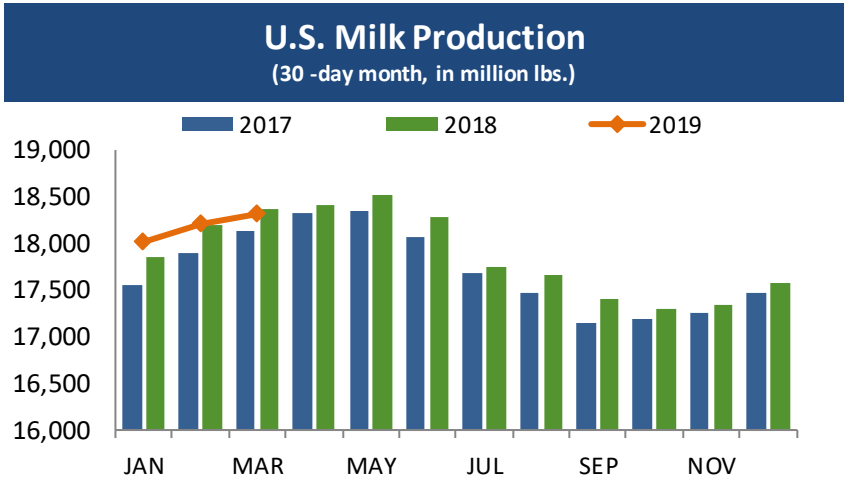
Top Export Region YOY Milk Production
(in million pounds)

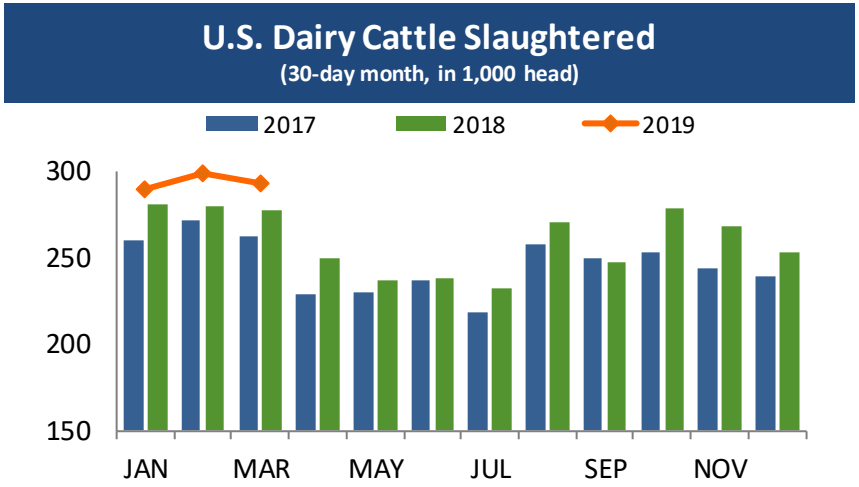


U.S. falls below prior year

For the first time since December 2013

- For the first time in 63 months, the United States fell below prior year levels in March (excluding February 2017)
  - March milk was down 0.4% compared to 2018. Output totaled 18.9 billion pounds.
  - Texas and California led production gains.
  - Losses from Pennsylvania more than offset increases from Texas.
- Slaughter rates are elevated with year-to-date culling outpacing last year by 5.1%

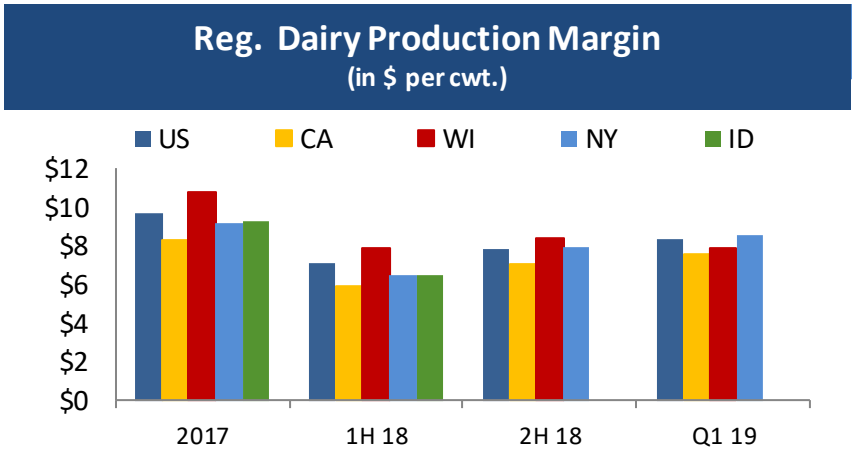


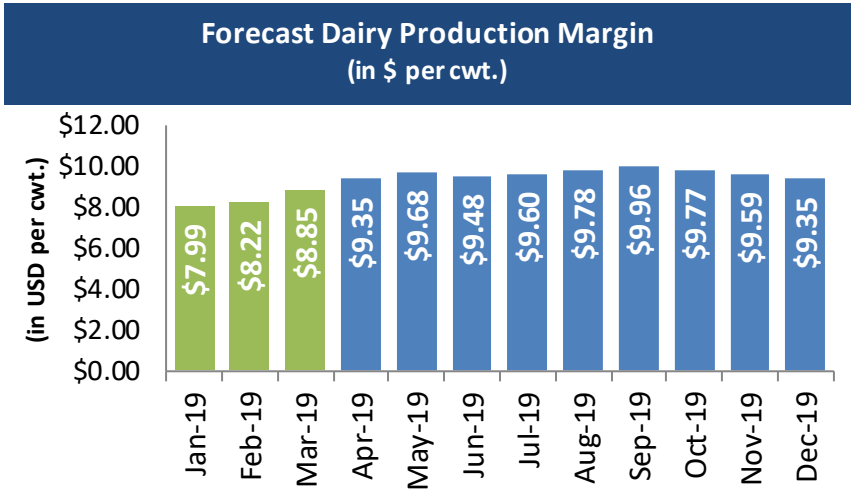


Milk-over-feed inches higher

So far, 2019 is looking better than 2018

- The February 2019 milk-over-feed forecast margin (DMC) averaged $8.22/cwt.
  - That compares to $6.88/cwt. last year.
  - Substantially higher milk prices are causing the year-over-year (YOY) change on modestly higher feed costs.
- February was higher than January also by 23¢.
- While margins are showing signs of improvement and forecasts are positive it could still be challenging for dairies after months of lower than expected margins.

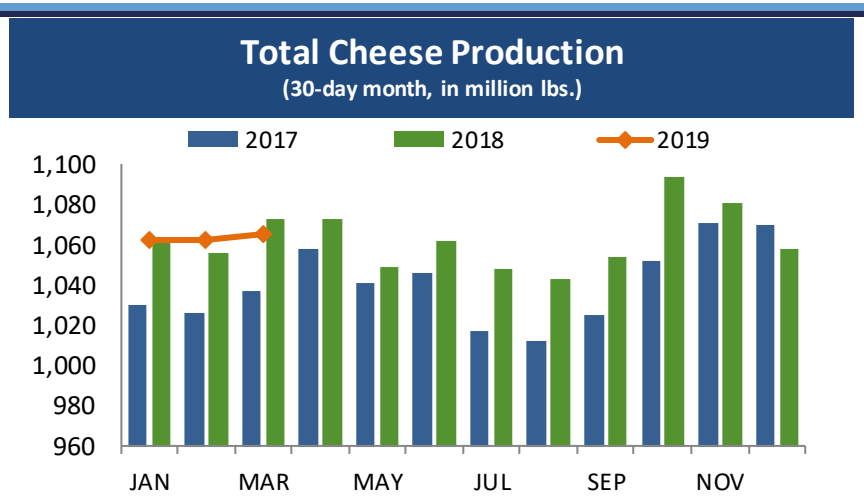


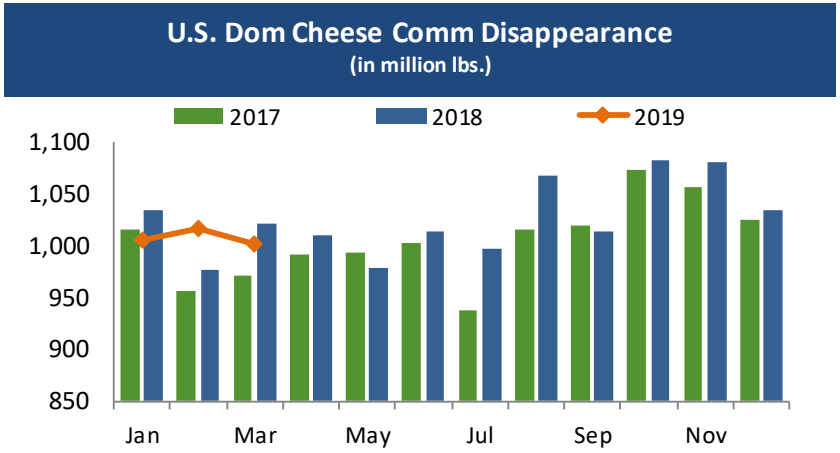


Cheese output below year ago

Total cheese production dropped below 2018 in March

- Cheese production was 1.1 billion pounds in March, 0.7% less than the prior year.
  - U.S. Cheddar cheese production was 3.5% less than the prior year.
  - Mozzarella production increased 1.8%. That number could increase as Agropur's plant expansion comes on line.
  - Hard Italian cheese production fell 7.8% below last year.
- Domestic U.S. cheese consumption was below the prior year in March.
  - In March, commercial disappearance was -1.9% vs. the prior year.
  - The year-over-year disparity could be related to the late Easter-holiday in 2019 compared to last year.
- Cheddar cheese production continues to struggle and that could be the reason behind the recent increase in price. That could suggest more price hikes later in the year.

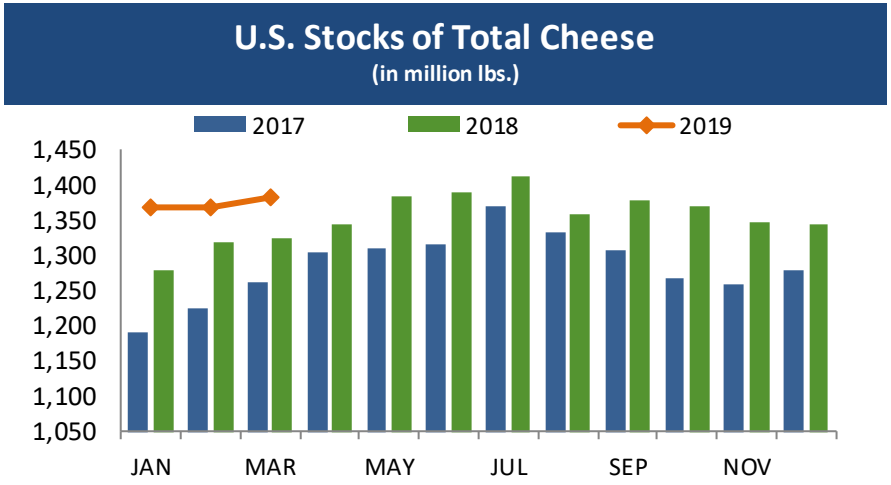


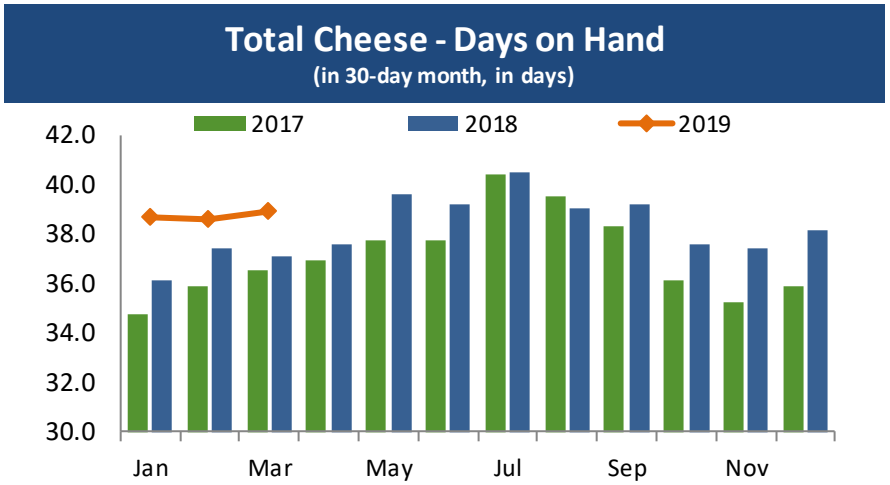


Stocks are flat

…seasonal trends are absent from cheese stock data

- In 2017 and 2018 the difference between January and March stocks was 46 to 70 million pounds difference – this year it is a scan 12 million pounds reflecting the truly flat quality of current data.
- Cheese stocks should be headed toward their season peak in June or July, but at the current pace there may be very little seasonal build – that would be consistent with Midwest milk supplies this year.
- In March, cheese stocks totaled 1.38 billion pounds up 4.3% vs. the prior year.

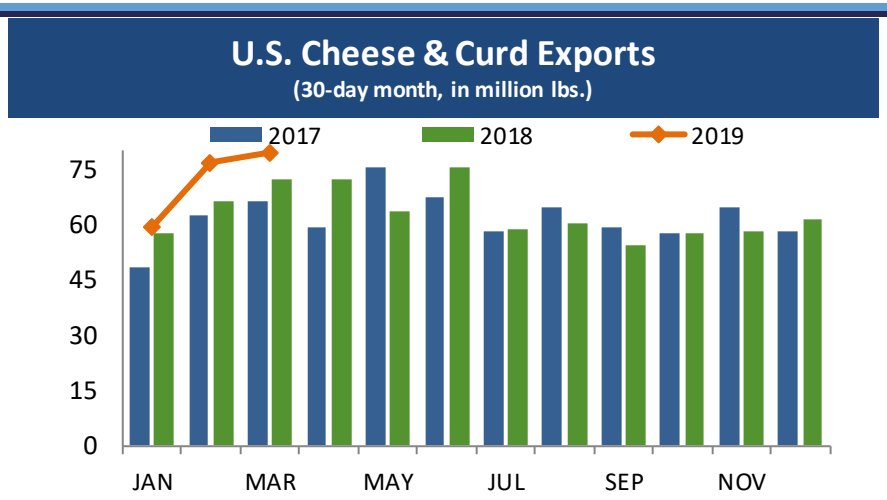


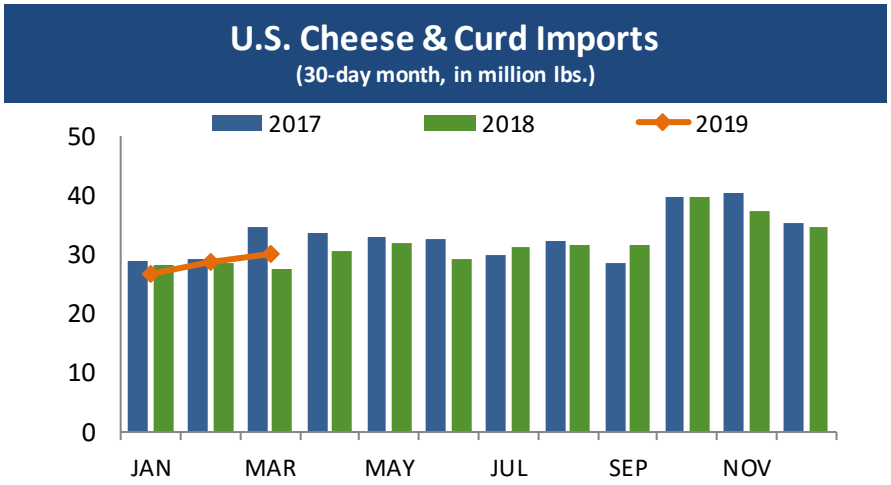


U.S. cheese exports strong

U.S. cheese exports are a bright spot despite trade disputes

- In March, U.S. cheese exports totaled nearly 82 million pounds, 9.9% more than last year and the highest monthly total on record.
  - That is a strong export number given 2018 was a pre-tariff period.
  - Higher volumes to South Korea and Japan offset lower volumes to Mexico and Australia. U.S. exporters also made headway into the Middle East in March.
- U.S. cheese imports totaled 31 million pounds, up 9.4% compared to the prior year.
- This week the Trump Administration pushed off the tariffs on automobiles.
  - Given the market response to the deteriorating trade relationship with China – it could make the likelihood of tariffs on European products less likely at this time.
  - Hearings are underway this week.

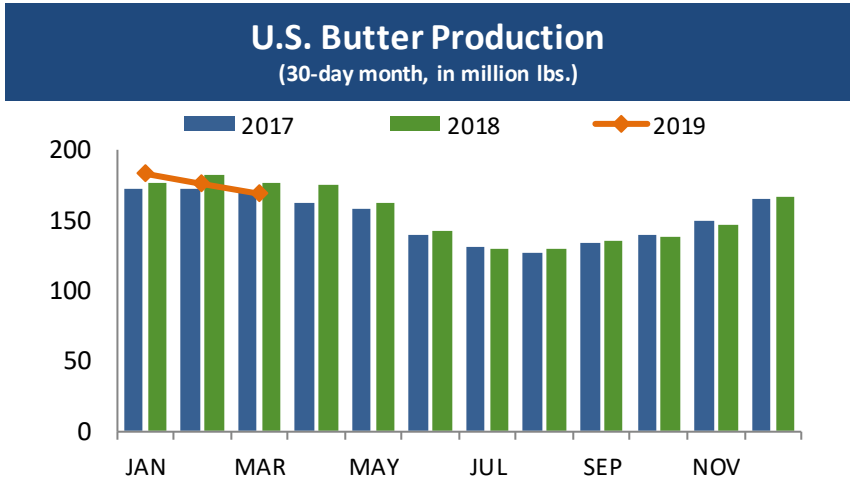


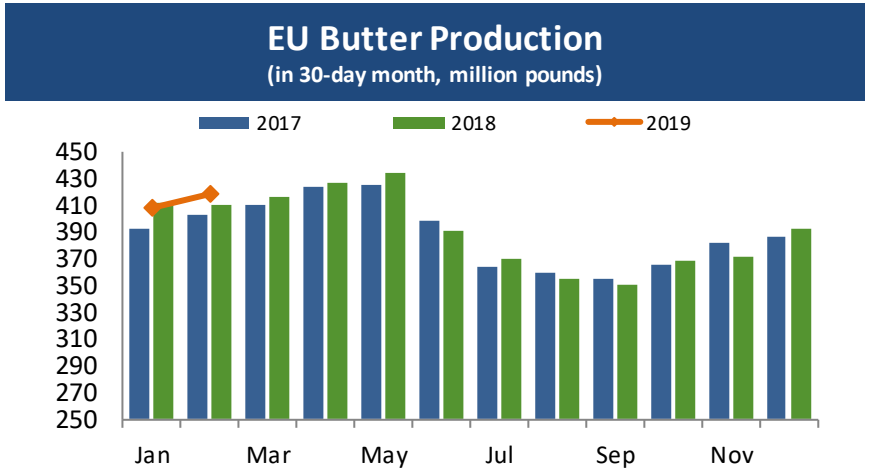


Butter lower than last year

Production remains low as other products command cream

- U.S. butter production totaled 174.8 million pounds in March, down 4% vs. prior year.
  - Butter output from California and Pennsylvania remains lower than 2018. Land O'Lakes is one of the largest butter processors in both states. Given the nature of the business that could put them in the hunt for bulk butter for micro-fixing.
  - Anecdotal reports suggest there is a lot of competition for butterfat in milk, high-fat products and cheese leaving butter plants to remain less than full or paying up for cream.
  - Hard ice cream production increased in March.
- EU January butter production totaled 390 million pounds, +1.8% vs. the prior year.

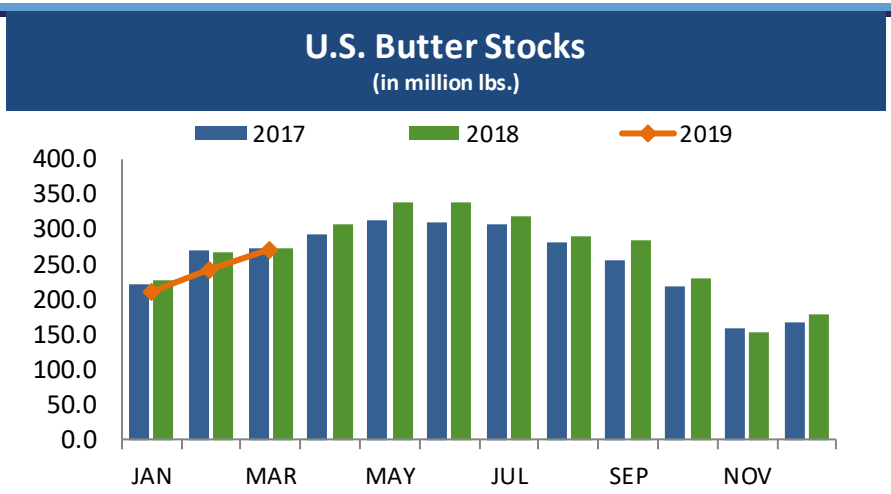


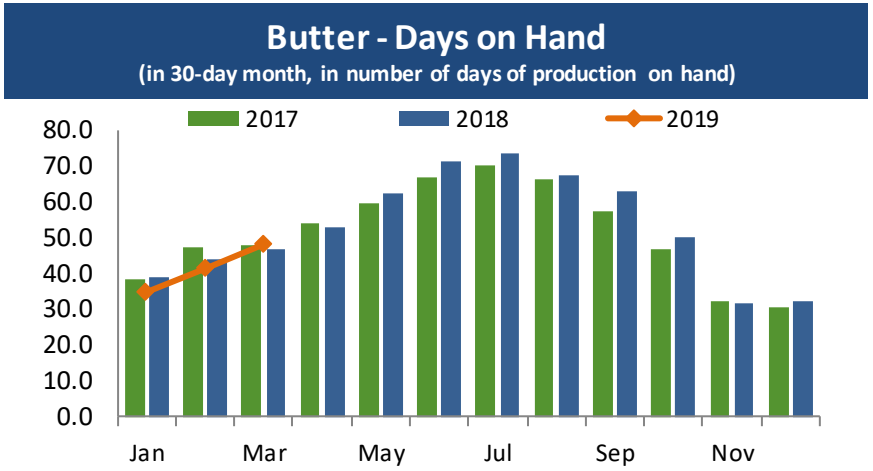


Butter build on track

Stocks are similar but lower than the past two years

- U.S. butter stocks are rising and expected to near the peak in the next month or so. Stocks totaled 270.2 million pounds, down 1.4% compared to the prior year.
- The days on hand, in terms of production, totaled 48 days at the end of March – the lowest since 2010, but marginally higher than 2017. The Easter holiday could be creating some comparison issues.
- That same calculation based on commercial disappearance was 54.5 days for the end of March, the highest since 2010.

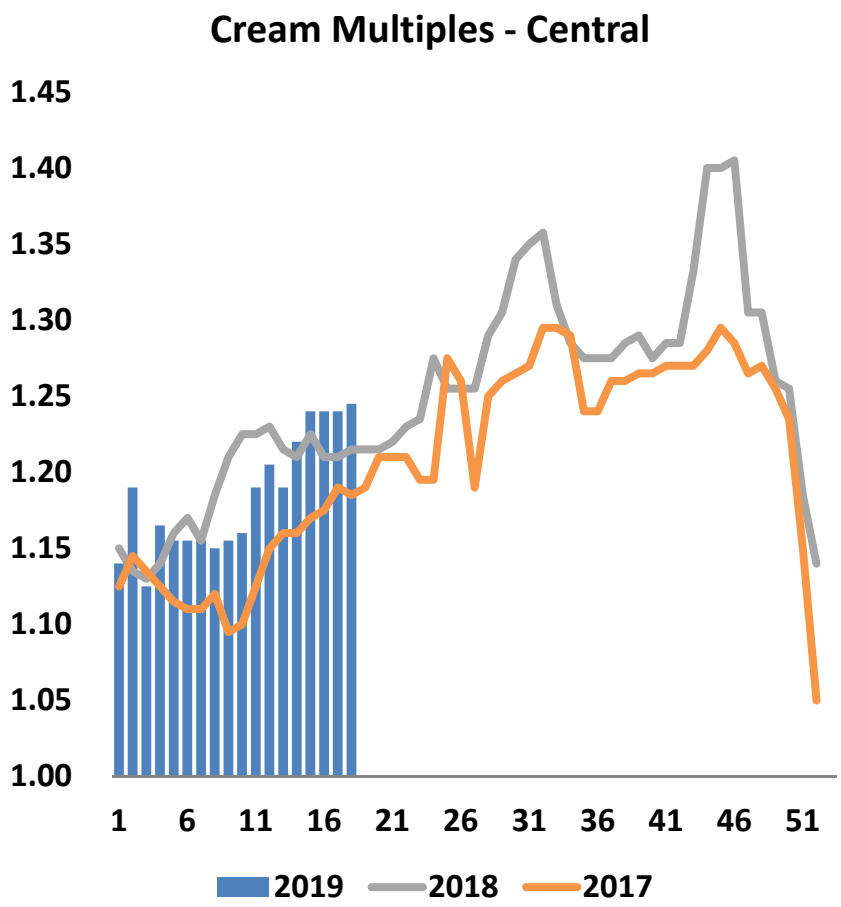




Cream multipliers on the rise

Post-Easter and in the flush multipliers are higher

- With Easter demand behind markets and in the midst of the spring flush, cream multipliers throughout the country are rising.
  - That could be an indication of potentially stronger markets on the horizon.
  - Traditionally, this is a time that butter plants busy themselves with the final push before the depletion season begins in the summer.
  - This year butter plants are faced with cream demand on several fronts and ice cream season starting up at a faster pace this year.
- That could portend higher cream multipliers this summer to entice West Coast cream to the Midwest.

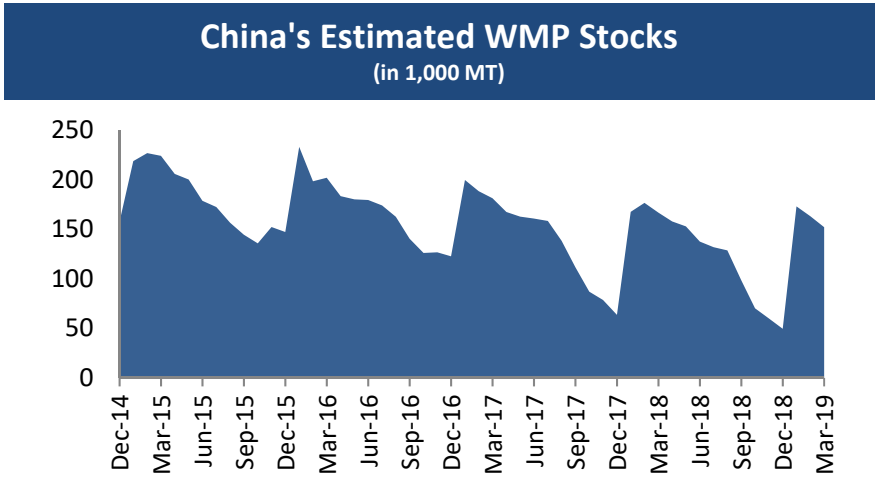


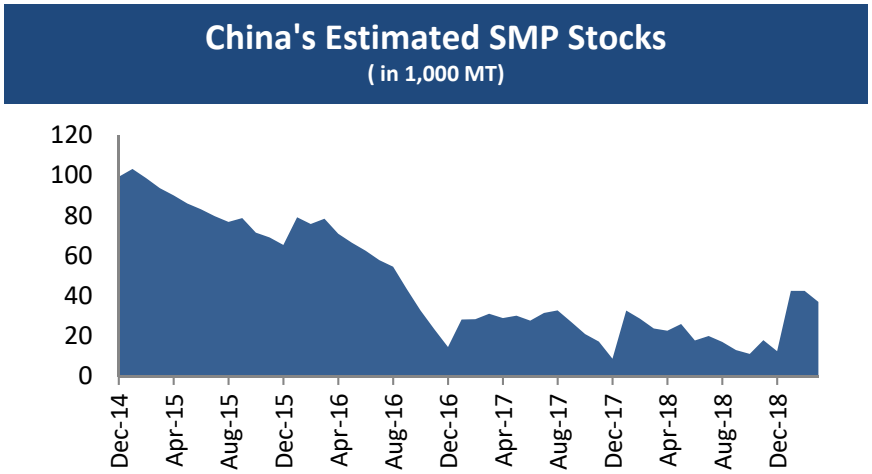
China's stocks replenished

Still, the lowest stocks for March over the last 3 years

ceres

- China's stocks are replenished headed into the spring.
- Typically these stocks provide a buffer as New Zealand head into the end of its season.
- Still, these are the lowest for this time of year in sometime – that could keep China buying this summer at a higher pace.





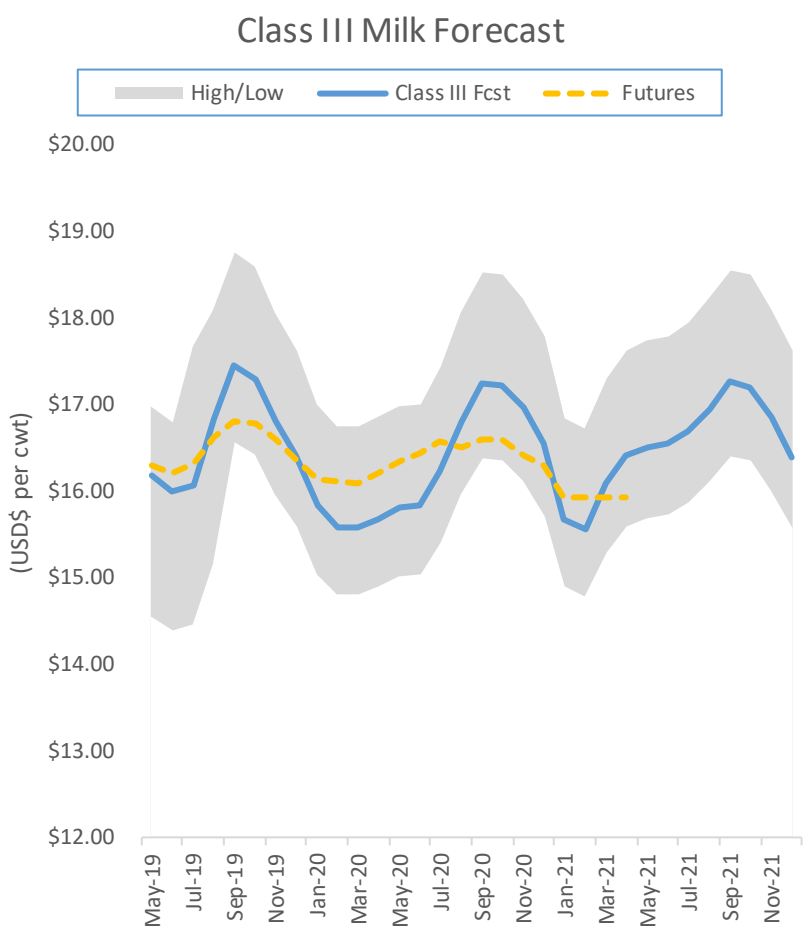
Key take-away

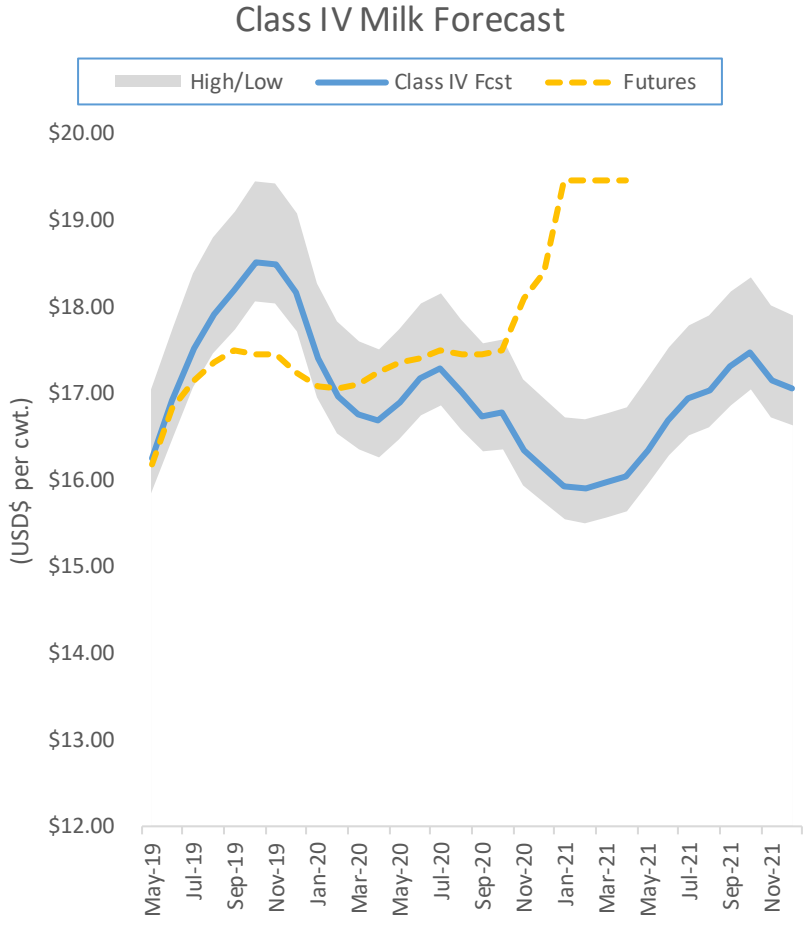
- The block-barrel spread remains near historic levels and that could buoy Class III prices.
- Milk output still flat – with robust demand that could drive higher prices later in the year.
- U.S trade remains day-to-day and tenuous at best – that could impact dairy and feed markets this summer.
- Stronger U.S. dollar creates a challenge for exporters and higher milk prices.
- Butter markets could surprise later this year if supplies remain limited.

Items to watch

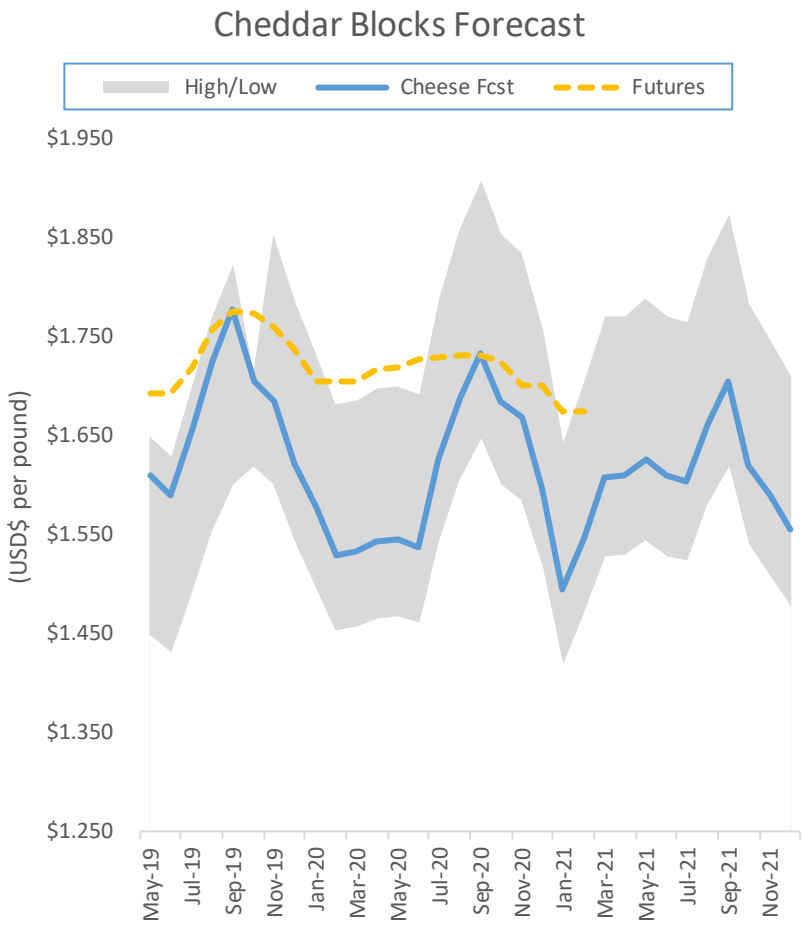
- \+ Global milk production that remains flat
- \+ CME block-barrel spread at "normal" levels
- − Signs of a U.S. recession.
- − Trade wars expanding or impacting economy
- − Strong U.S. dollar
- \+ Stronger U.S. commercial disappearance
- \+ Rising oil prices – positive for export market
- − Sharply higher prices could slow demand
- \+ Poor on-farm margins driving exit from business
- \+ Reduced stockpiles of dairy products

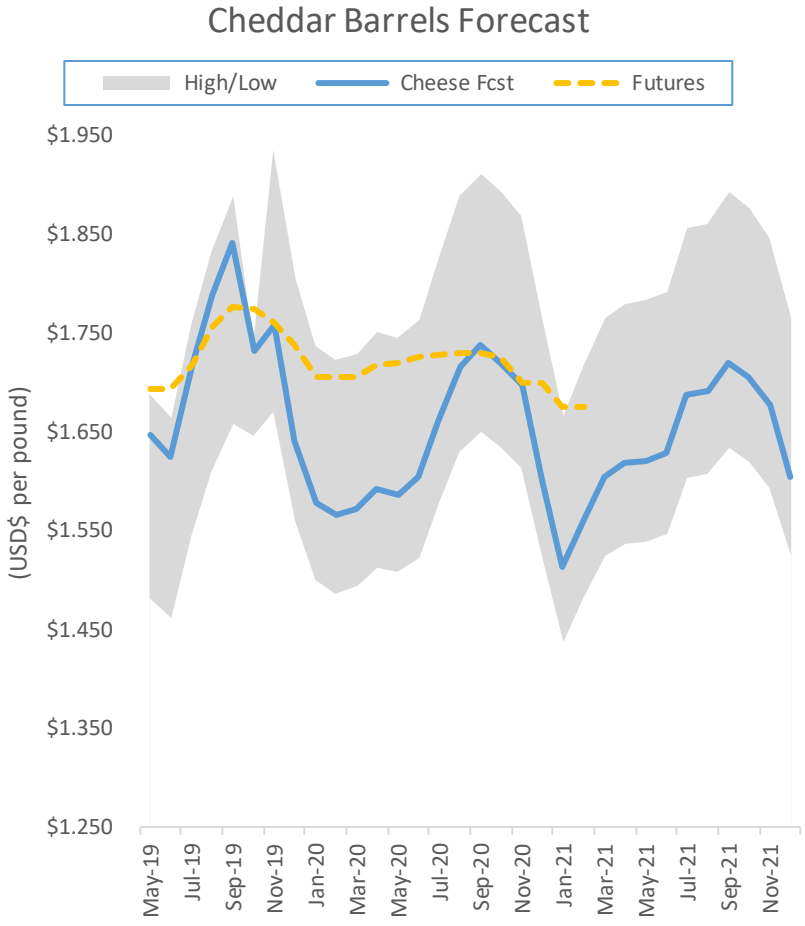
Class III & IV milk



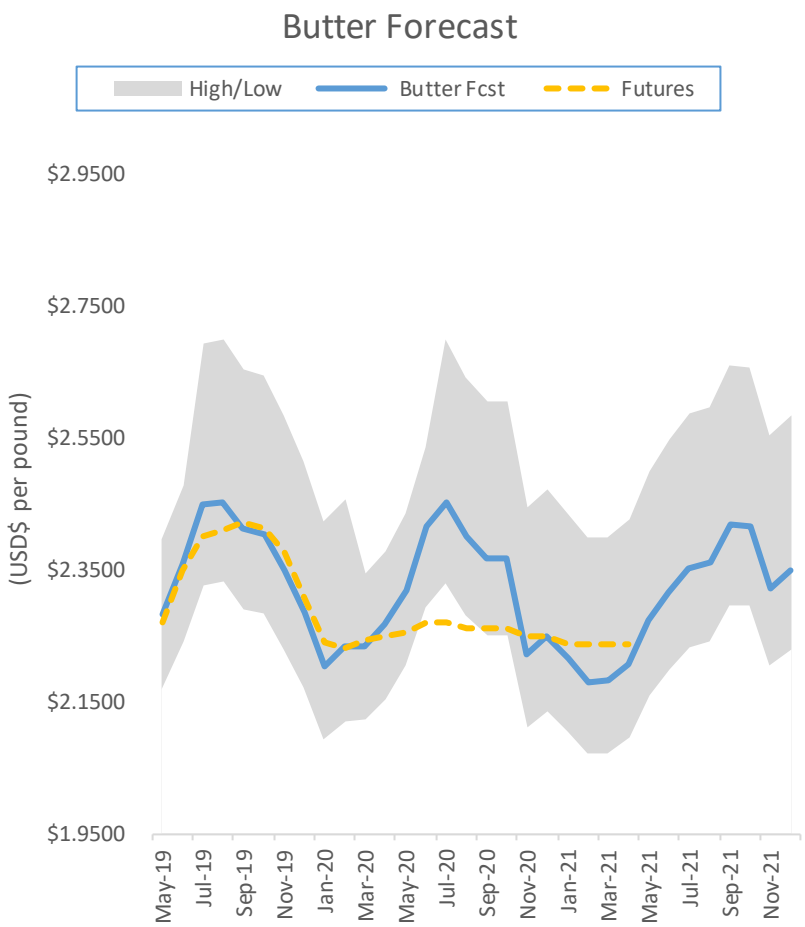


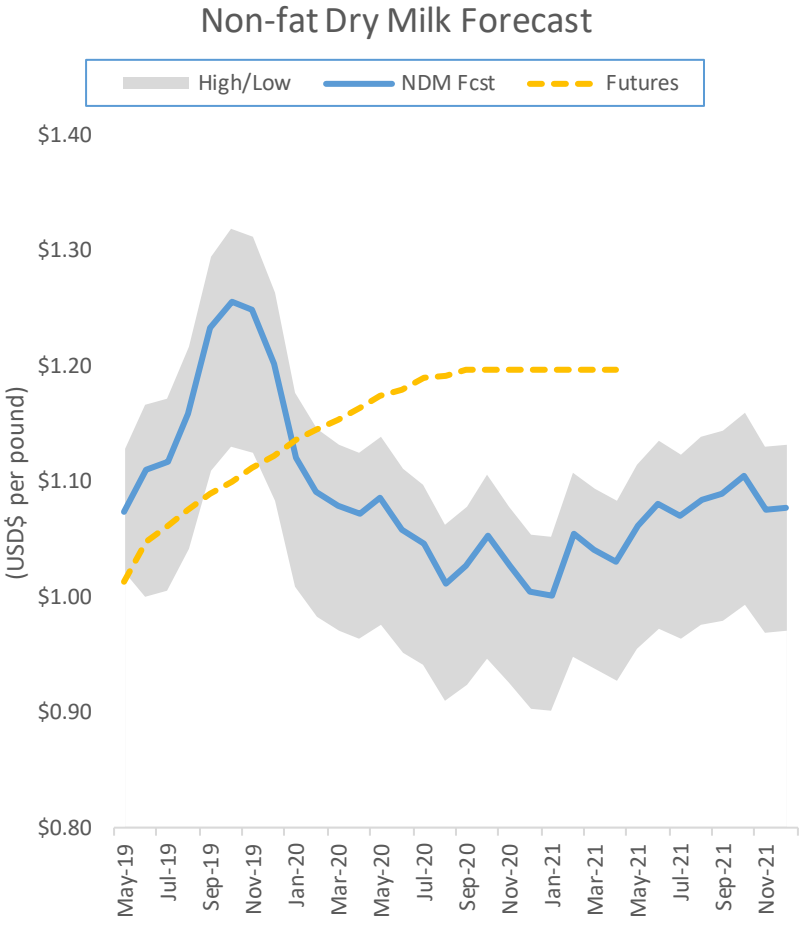
CME Cheese


Cheddar Blocks Forecast
High/Low
Cheese Fcst
Futures
$1.950
$1.850
$1.750
$1.650
$1.550
$1.450
$1.350
$1.250
(USD$ per pound)
May-19
Jul-19
Sep-19
Nov-19
Jan-20
Mar-20
May-20
Jul-20
Sep-20
Nov-20
Jan-21
Mar-21
May-21
Jul-21
Sep-21
Nov-21

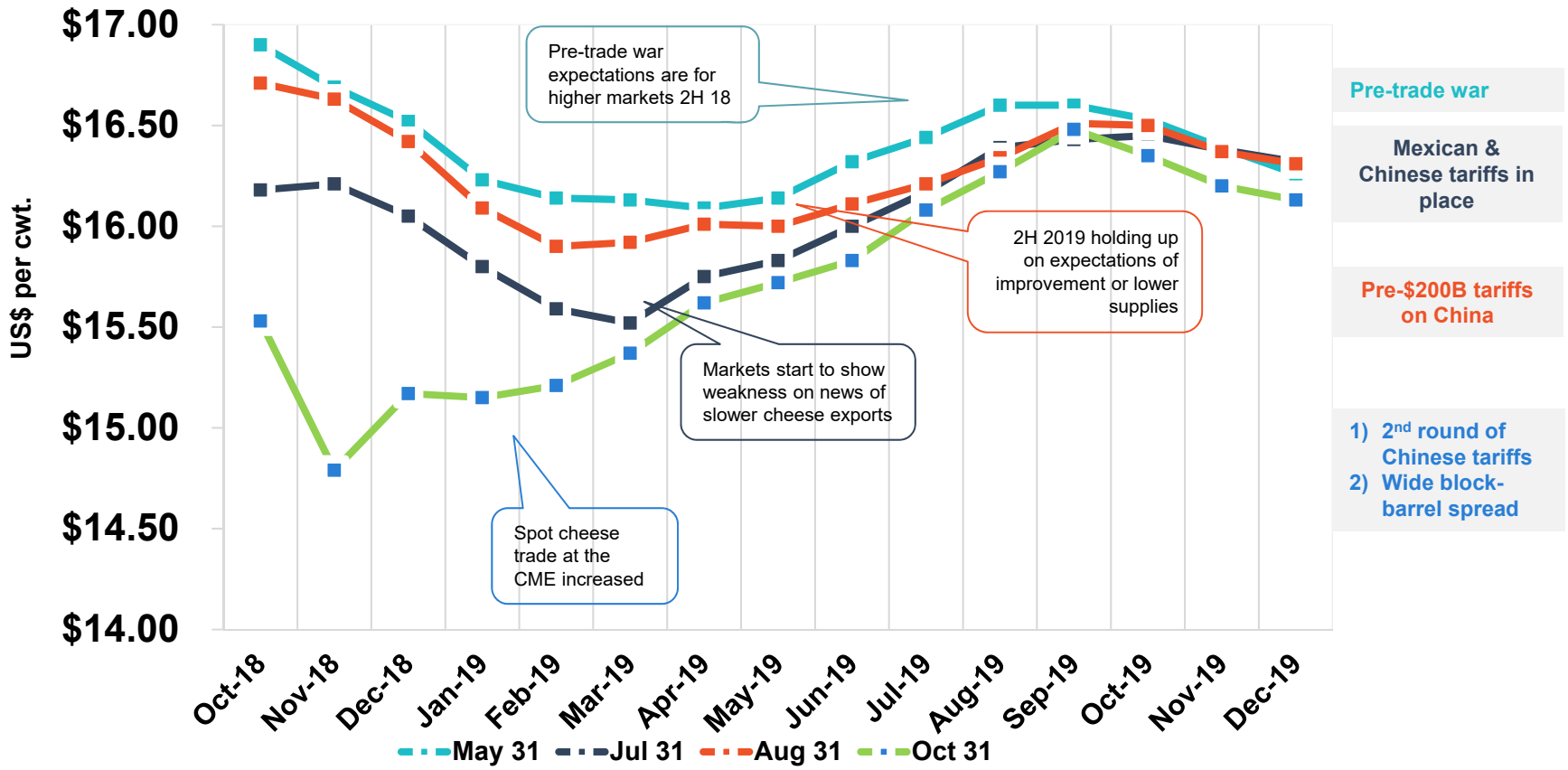

Cheddar Barrels Forecast
High/Low
Cheese Fcst
Futures
$1.950
$1.850
$1.750
$1.650
$1.550
$1.450
$1.350
$1.250
(USD$ per pound)
May-19
Jul-19
Sep-19
Nov-19
Jan-20
Mar-20
May-20
Jul-20
Sep-20
Nov-20
Jan-21
Mar-21
May-21
Jul-21
Sep-21
Nov-21

Butter and NDM





Markets were similar last year

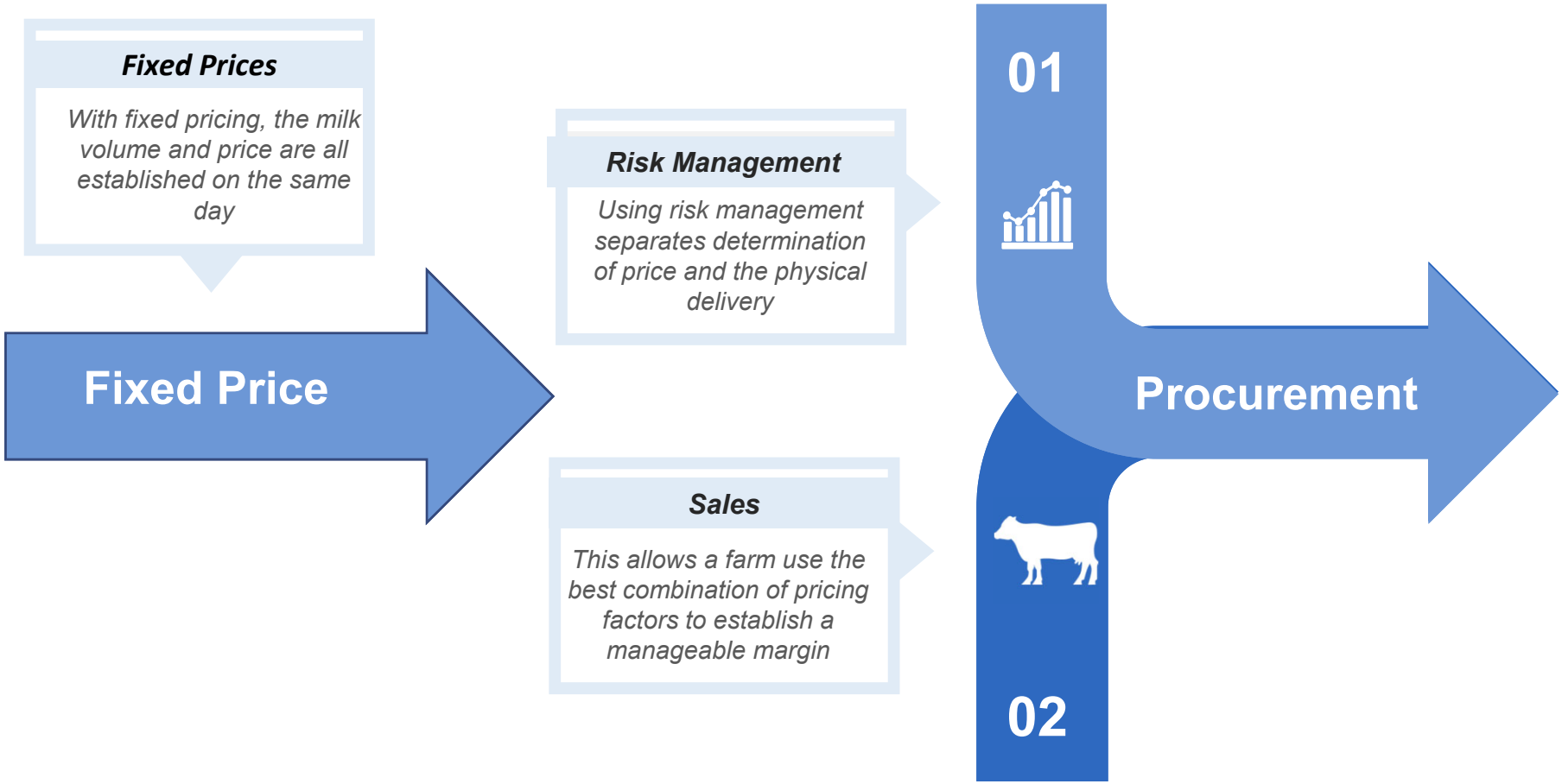


Source: CME Group

Why do you need risk management?

- Ups and downs are fun on a roller coaster, not your business.
- Risk management makes your business more manageable and puts control over returns back in the hands of the farm.
- Unmanaged margins can negatively impact controllable costs.

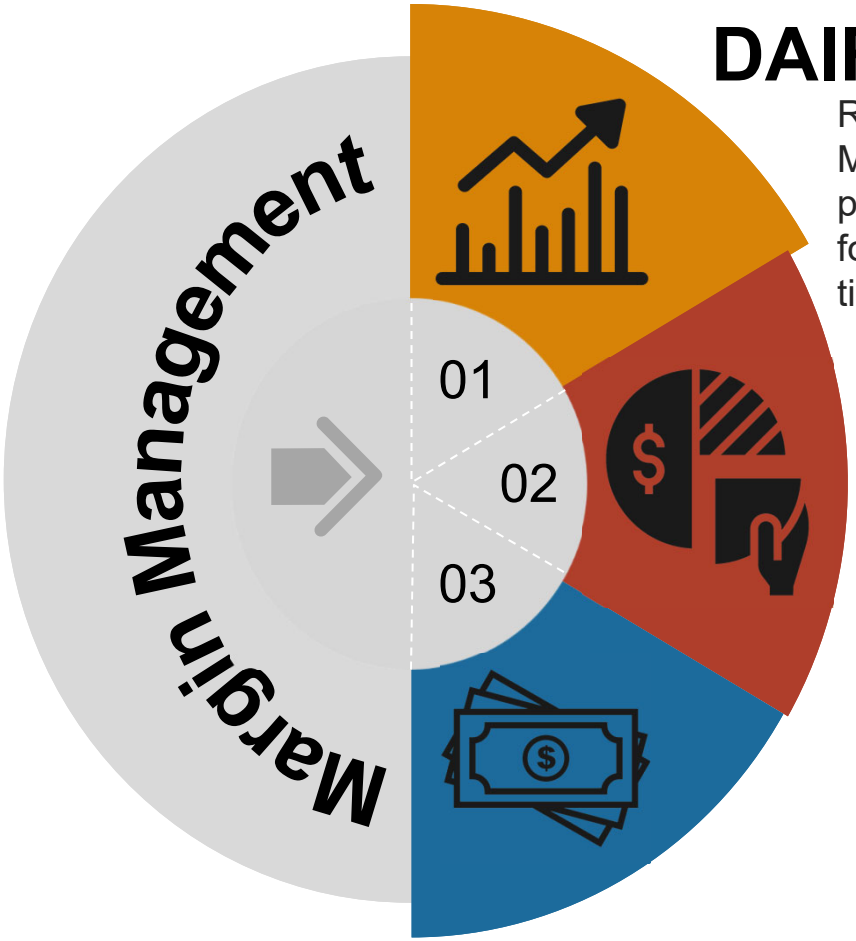
Why use risk management?



The Tools

What are the various ways to manage price risk?

What tools are available to farms?



DAIRY MARGIN COVERAGE

Revamped Dairy Margin Protection Program. Minimum coverage $100. For less than 5 million pounds per year, premiums have been reduced and for more than 5 million the new program provides tiers.

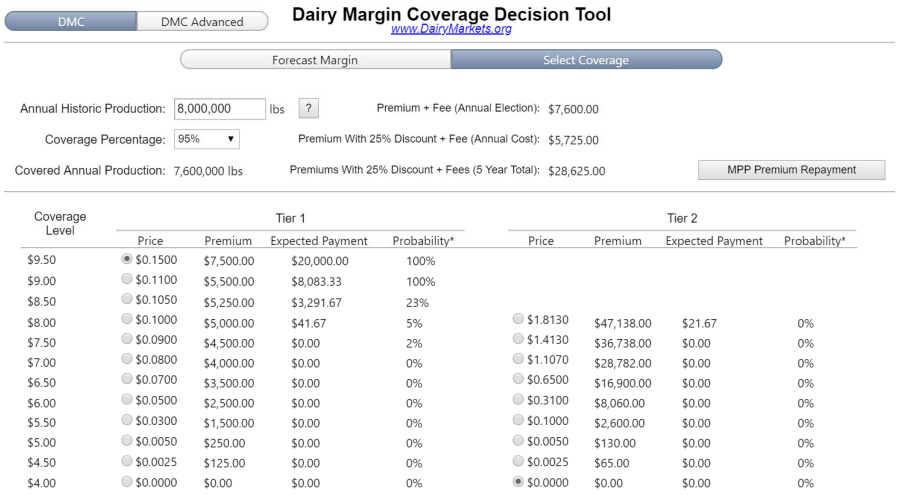
DAIRY RP

New crop insurance program that started Oct. 2018. The program functions on a quarterly basis, fees assessed after the fact, protection based on components or milk.

FUTURES, OPTIONS & FORWARDS

Dairy Margin Coverage (DMC)

- Eligibility:
  - Produce and commercially market milk from cows located in the United States; and
  - Provide proof of milk production at the time of registration.
- Dairy may have more than one owner;
- Owner must share in risk of producing milk and make contributions to the operations;
- Operations must comply with the highly erodible land and wetland conservation provisions;
- Producers may have more than one dairy, but they must be separate organizations.



DMC | DMC Advanced

Dairy Margin Coverage Decision Tool

www.DairyMarkets.org

Forecast Margin | Select Coverage

Annual Historic Production: 8,000,000 lbs ?

Coverage Percentage: 95%

Covered Annual Production: 7,600,000 lbs

Premium + Fee (Annual Election): $7,600.00

Premium With 25% Discount + Fee (Annual Cost): $5,725.00

Premiums With 25% Discount + Fees (5 Year Total): $28,625.00

MPP Premium Repayment

Coverage Level	Tier 1				Tier 2			
	Price	Premium	Expected Payment	Probability*	Price	Premium	Expected Payment	Probability*
$9.50	$0.1500	$7,500.00	$20,000.00	100%				
$9.00	$0.1100	$5,500.00	$8,083.33	100%				
$8.50	$0.1050	$5,250.00	$3,291.67	23%				
$8.00	$0.1000	$5,000.00	$41.67	5%	$1.8130	$47,138.00	$21.67	0%
$7.50	$0.0900	$4,500.00	$0.00	2%	$1.4130	$36,738.00	$0.00	0%
$7.00	$0.0800	$4,000.00	$0.00	0%	$1.1070	$28,782.00	$0.00	0%
$6.50	$0.0700	$3,500.00	$0.00	0%	$0.6500	$16,900.00	$0.00	0%
$6.00	$0.0500	$2,500.00	$0.00	0%	$0.3100	$8,060.00	$0.00	0%
$5.50	$0.0300	$1,500.00	$0.00	0%	$0.1000	$2,600.00	$0.00	0%
$5.00	$0.0050	$250.00	$0.00	0%	$0.0050	$130.00	$0.00	0%
$4.50	$0.0025	$125.00	$0.00	0%	$0.0025	$65.00	$0.00	0%
$4.00	$0.0000	$0.00	$0.00	0%	$0.0000	$0.00	$0.00	0%

DMC pays off for Q1

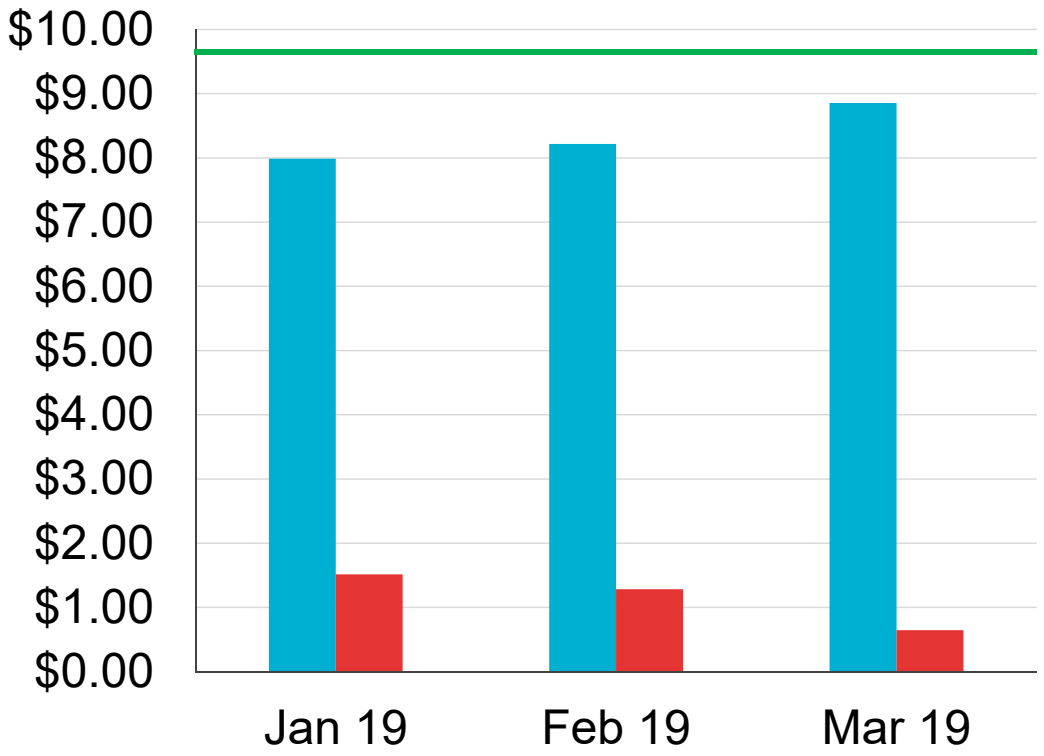
DMC 2019

DMC Margin

In Q1 2019 the DMC margin was below the $9.50 insurance levels

DMC Payment

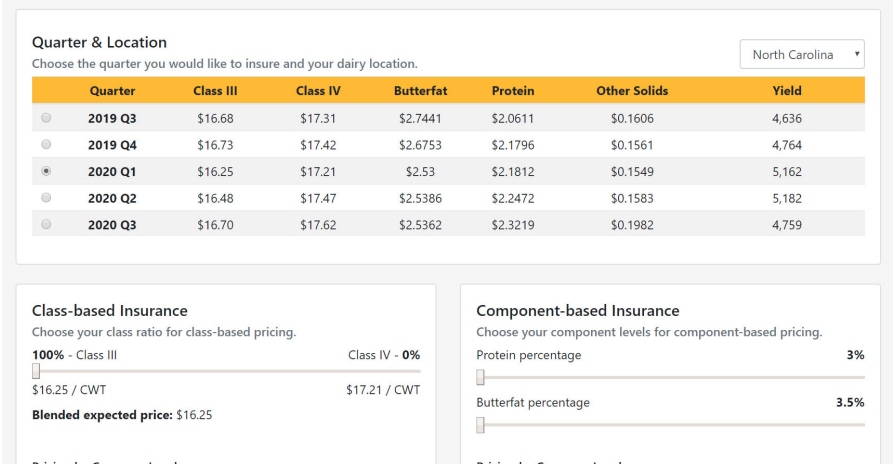
Estimated payment of $23,000 in Q1 19 for an 8,000,000 per year farm less a premium cost of $5,725



Dairy RP

Program is promising, but needs some review

- Dairy RP is a revenue program – that means it is a function of volume and price.
  - The volume is based on the "pool" comparing the forecasted yield to actual output-per-cow.
  - Settlements are based on estimates.
  - There are two pricing alternatives – components and class.
- The U.S. government subsidies some of the premium.
- Coverage is quarterly.
- Premiums are not deducted until the settlement.
- Price should match milk check – not just the highest price.

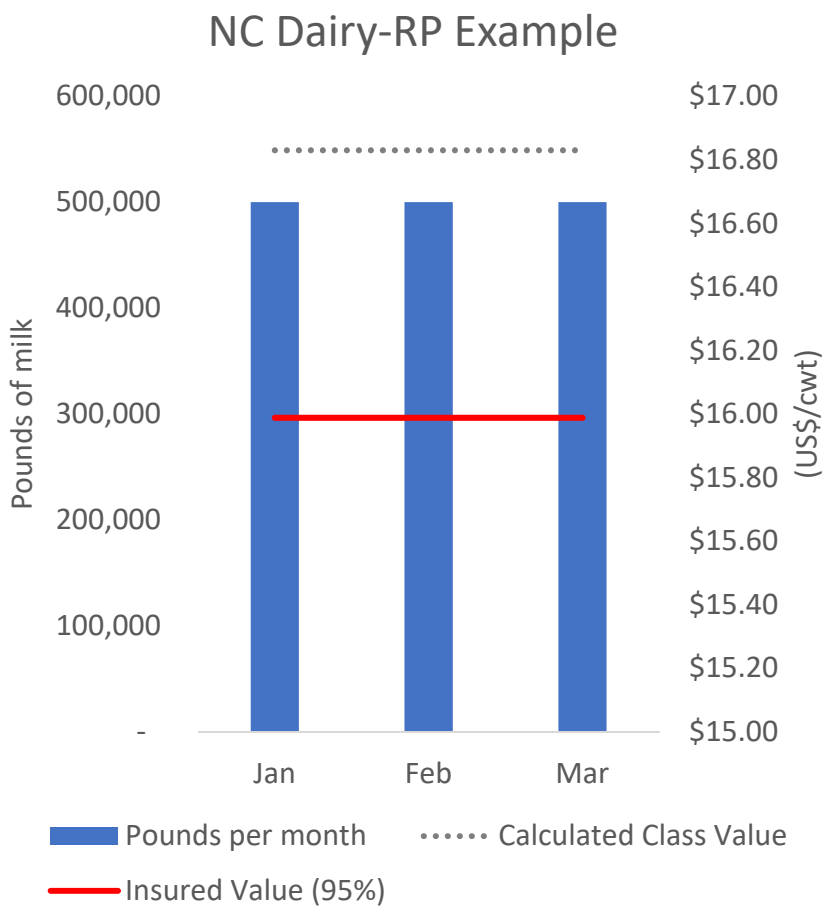


Coverage Level %	80	85	90	95
Premium Subsidy %	55	49	44	44

Dairy RP Example

Producer Declarations	
Declared covered milk production	1,500,000
State	N Carolina
Declared Share	100%
Expected milk production per cow	5,162
Coverage level	0.95
Protection Factor	1.00
Subsidy rate	44%
Declared class price weighting factor	0.4
Expected class III milk price	$ 16.26
Expected class IV milk price	$ 17.21

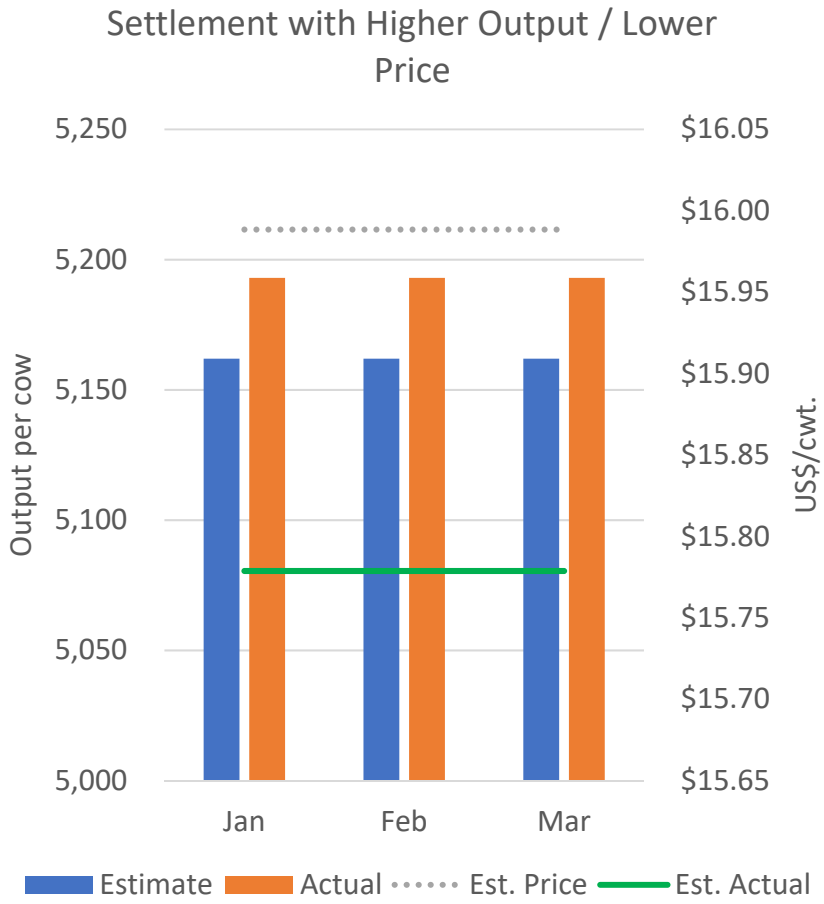
Premium Calculation	
Liability/Revenue Guarantee	$239,828
Premium Rate	$ 0.0161
Gross Premium	$2,868.00
Subsidy	$1,701.92
Producer Premium	**$2,166.08**



Dairy RP Example – Higher Production Lower Price

Producer Declarations	
Declared covered milk production	1,500,000
State	N Carolina
Declared Share	100%
Expected milk production per cow	5,162
Coverage level	0.95
Protection Factor	1.00
Subsidy rate	44%
Declared class price weighting factor	0.4
expected class III milk price	$ 16.26
expected class IV milk price	$ 17.21
Actual class III milk price	$ 15.45
Actual class IV milk price	$ 16.00
Actual milk production per cow	5,193
Milk Marketings	1,500,000

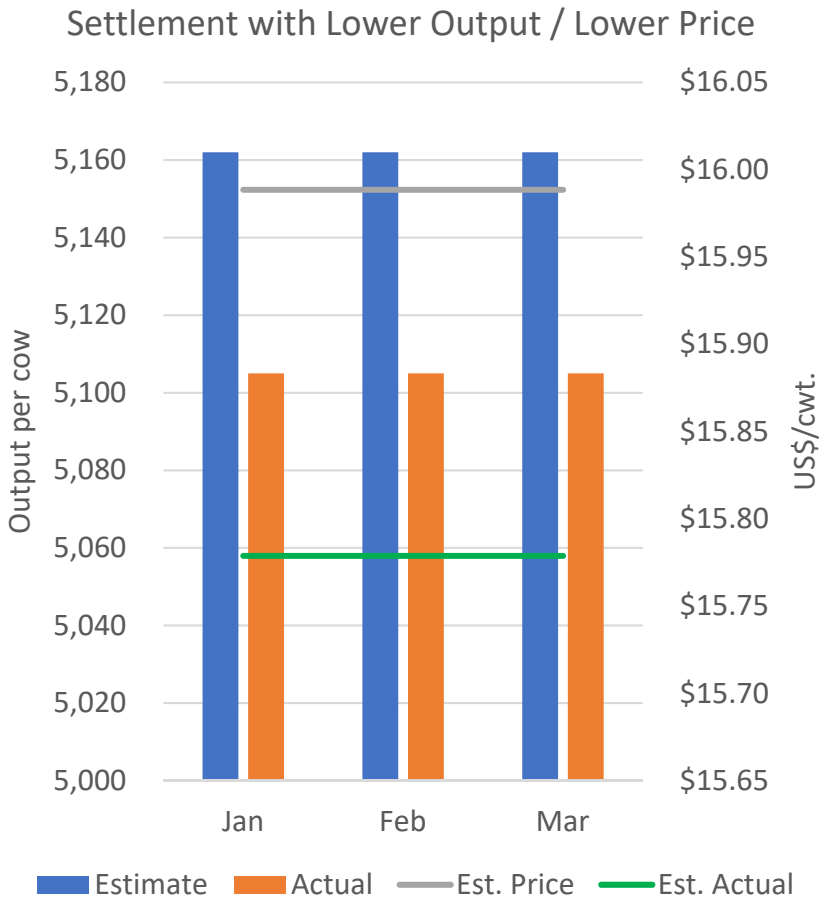
Indemnity Calculation	
Covered Milk Production	1,500,000
Final class pricing milk revenue	$ 252,450
Final revenue guarantee	$ 239,828
Yield adjustment factor	1.006
Class pricing actual milk revenue	$ 238,102
Indemnity on class pricing policy	$ 1,725



Dairy RP Example – Lower Production Slightly Lower Price

Producer Declarations	
Declared covered milk production	1,500,000
State	N Carolina
Declared Share	100%
Expected milk production per cow	5,162
Coverage level	0.95
Protection Factor	1.00
Subsidy rate	44%
Declared class price weighting factor	0.4
expected class III milk price	$ 16.26
expected class IV milk price	$ 17.21
Actual class III milk price	$ 15.45
Actual class IV milk price	$ 16.00
Actual milk production per cow	5,105
Milk Marketings	1,500,000

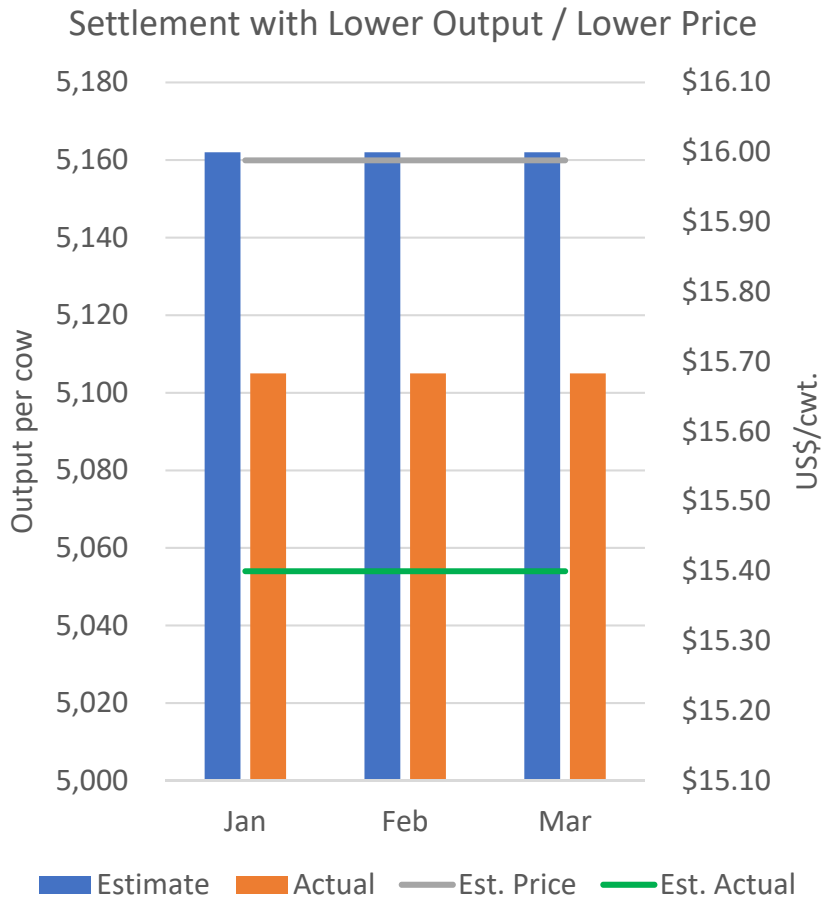
Indemnity Calculation	
Covered Milk Production	1,500,000
Final class pricing milk revenue	$ 252,450
Final revenue guarantee	$ 239,828
Yield adjustment factor	0.988957768
Class pricing actual milk revenue	$ 234,069
Indemnity on class pricing policy	$ 5,759



Dairy RP Example – Lower Production Much Lower Price

Producer Declarations	
Declared covered milk production	1,500,000
State	N Carolina
Declared Share	100%
Expected milk production per cow	5,162
Coverage level	0.95
Protection Factor	1.00
Subsidy rate	44%
Declared class price weighting factor	0.4
expected class III milk price	$ 16.26
expected class IV milk price	$ 17.21
Actual class III milk price	$ 15.25
Actual class IV milk price	$ 15.50
Actual milk production per cow	5,105
Milk Marketings	1,500,000

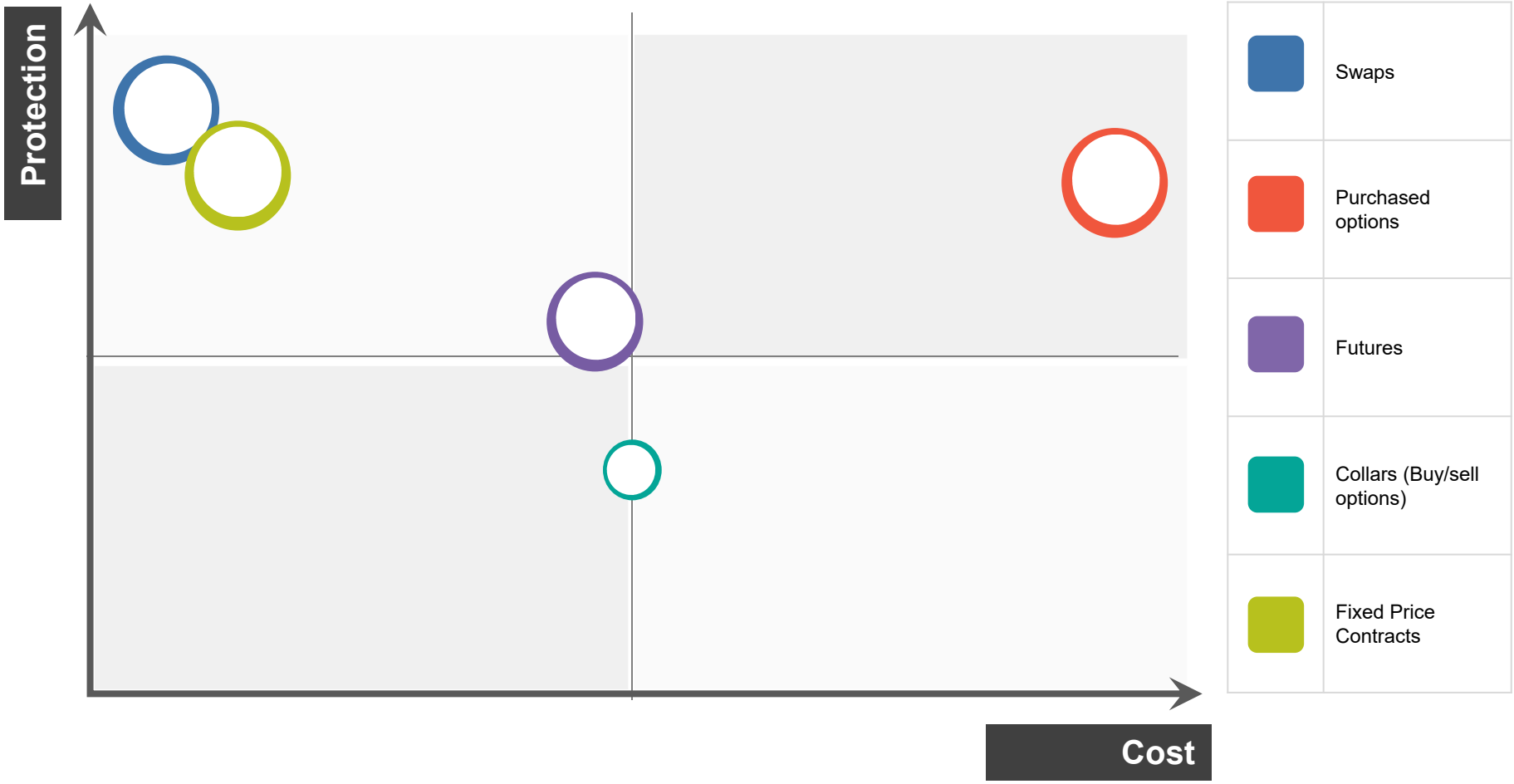
Indemnity Calculation	
Covered Milk Production	1,500,000
Final class pricing milk revenue	$ 252,450
Final revenue guarantee	$ 239,828
Yield adjustment factor	0.988957768
Class pricing actual milk revenue	$ 228,449
Indemnity on class pricing policy	$ 11,378



The Tools

	Fixed Price	Futures	Options	Swaps (OTC)
Description	Handler provides a fixed price contract for a firm volume, price and time.	A contract obligating the parties to take or to make delivery of a commodity on a specific date in the future.	A right to take (call) or make (put) delivery of a commodity on a specific date in the future.	A contract obligating the parties to take or to make delivery of a commodity on a specific date in the future – all contracts are cash settled.
Counter party	Coop or Processor – default pricing	Cleared by a regulated exchange.	Cleared by a regulated exchange.	Private companies, banks and brokers
Terms	Goes to delivery, customary terms & conditions apply	All terms of a Futures contract are standardized – prices is the only variable.	All terms of a Futures contract are standardized – prices is the only variable.	Cash settled. All terms are negotiable.
Collateral Requirements	None – normal credit terms apply.	Requires initial and maintenance margin. Performance for Futures Contracts is guaranteed by the Clearinghouse.	Requires premium for buyers and initial and maintenance margin for sellers. Performance for Futures Contracts is guaranteed by the Clearinghouse.	Less than market cleared products, but margin could apply.

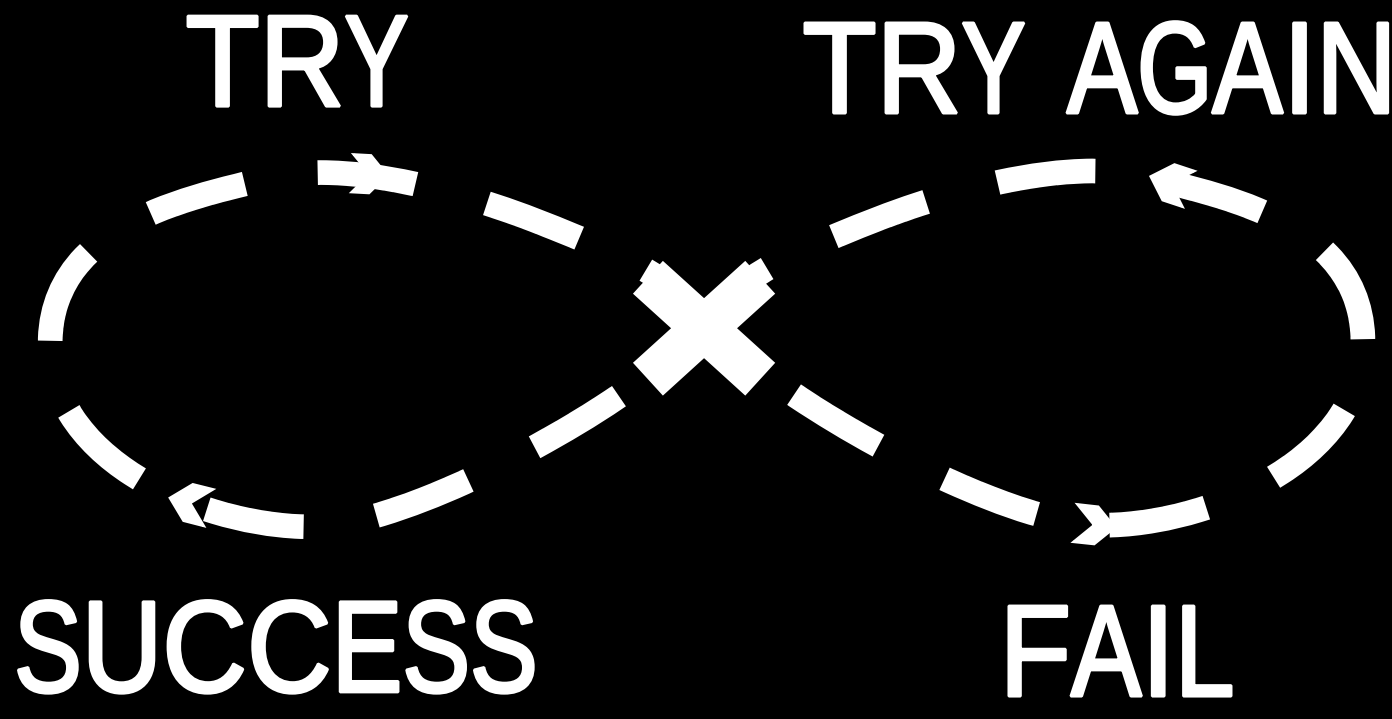
Which Tool? It's a trade off.



The Approach

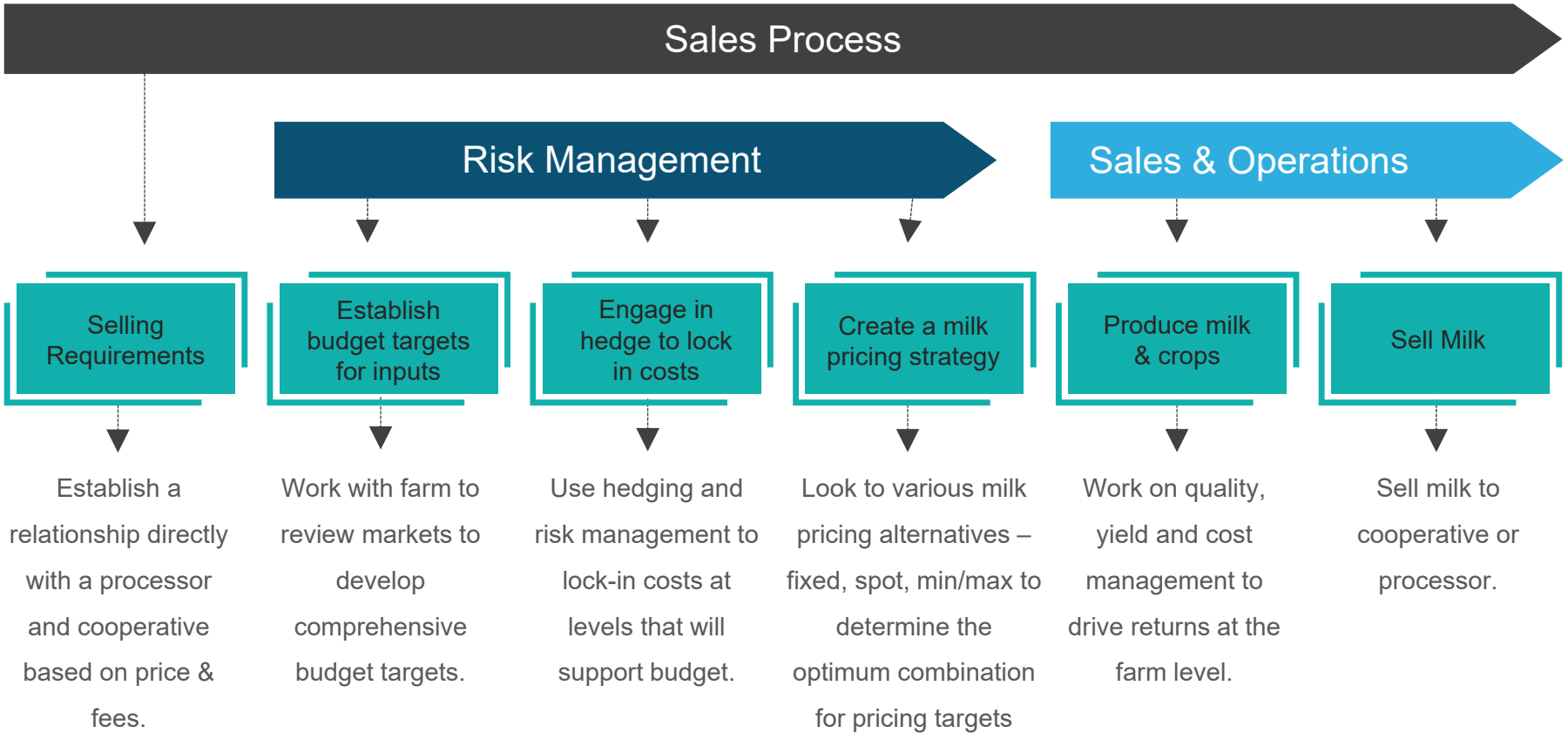
One size does not fit all for risk management

Risk MaNagemeNt 101:



The Risk Management Process

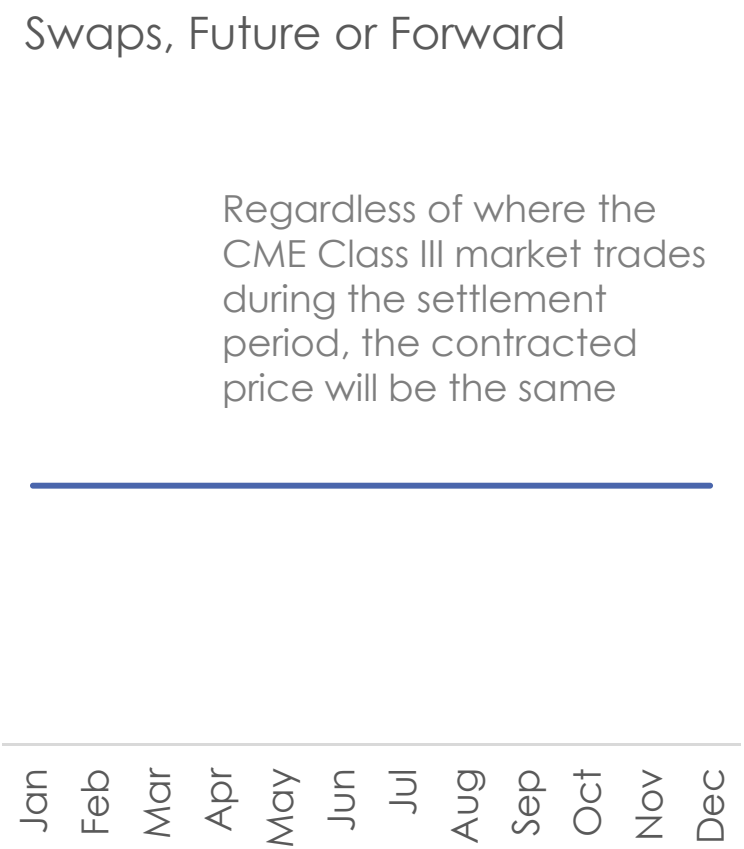
Risk Management Overview



Futures, Swaps& Forward Contracts

Futures, swaps and forward contracts have very little costs to an organization to enter and, in most cases, have very little on-going costs.

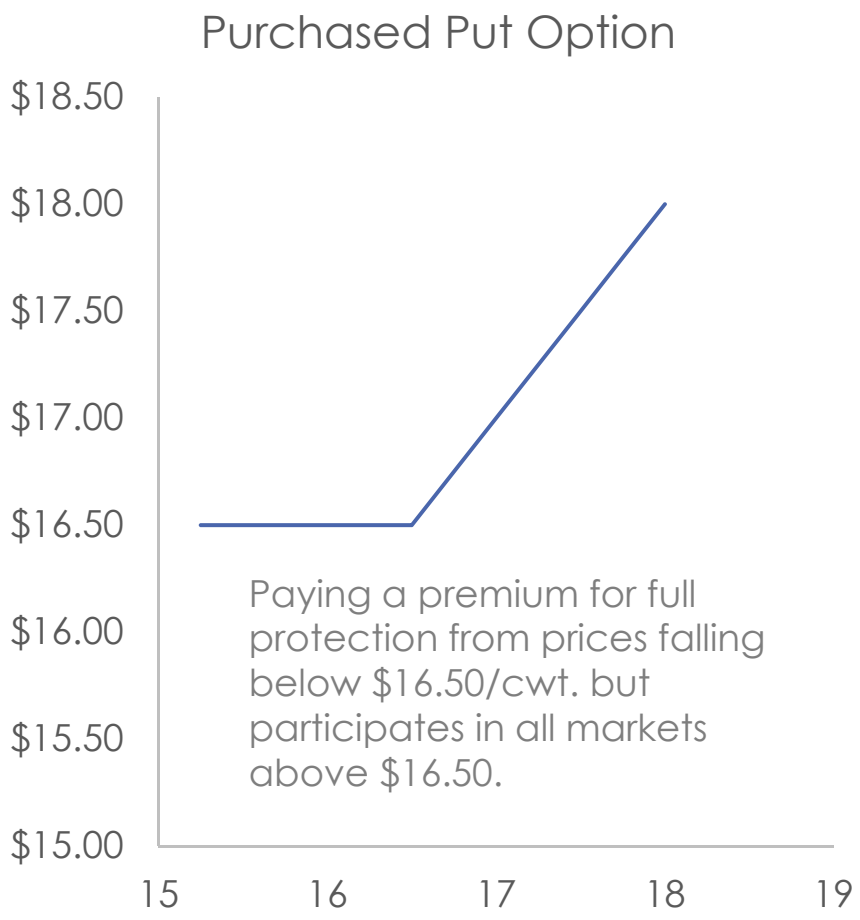
- **Pros:**
  - Allows a farm to lock-in a fixed product prices
  - Provides 100% protection against negative price moves
  - No upfront or on-going costs
  - No Credit or collateral is required (most of the time)
- **Cons:**
  - These types of contracts do not benefit from favorable market moves resulting in high opportunity costs
  - Introduction of counter-party risk



Purchased Options Contracts

Purchased put options provide the right, but not the obligation, to sell milk at a specified price (strike).

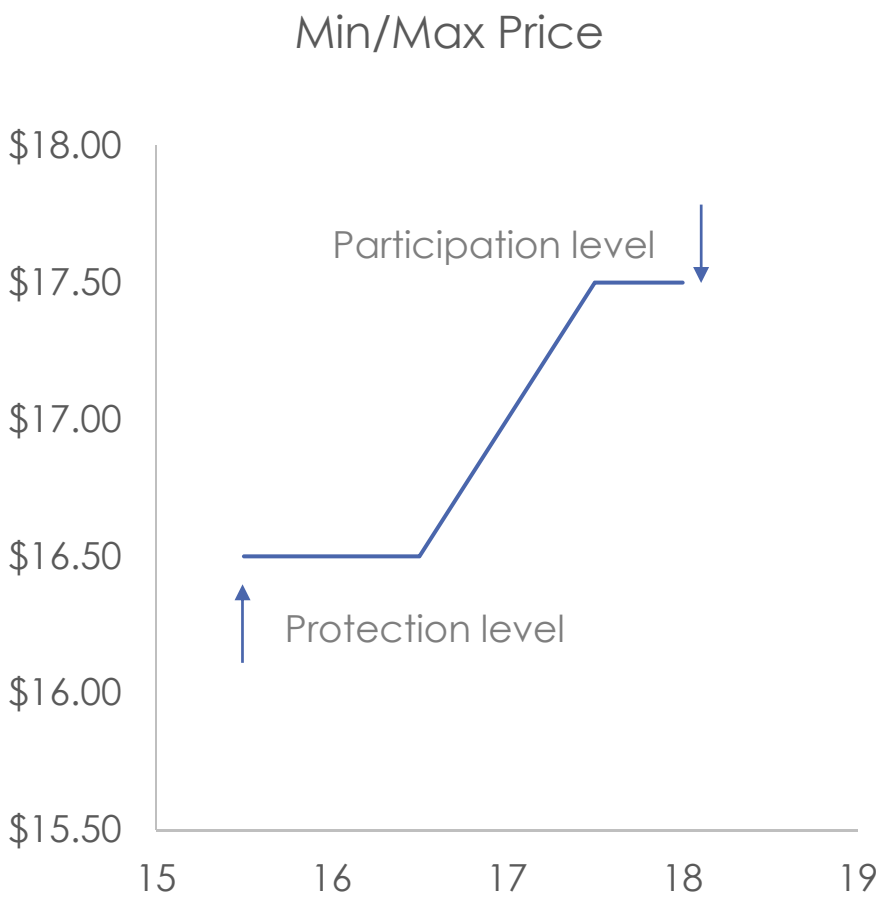
- **Pros:**
  - Allows a farm to set a minimum price for products while fully-participating in lower markets
  - Provides 100% protection against negative price moves below the strike price
  - No on-going costs
  - Limited counter-party risk
- **Cons:**
  - Cost of options can be costly and must be considered as a cost of the hedge
  - Earnings are still affected by market conditions as would not be locked into a milk price



Zero-Premium Options Collars

Zero-premium collars provide protection against adverse moves in the dairy markets while allowing for some downside participation.

- **Pros:**
  - Allows a farm to set a minimum price for milk while participating in higher markets up to a predetermined level.
  - There is considerable flexibility in determining the range between protection and participation
  - Provides 100% protection against negative price moves above the protection level
  - Limited counter-party risk
  - There are no upfront costs
- **Cons:**
  - Despite no upfront costs, similar to futures contracts a short option contract may incur negative maintenance margin during an counter move to the position.
  - Earnings are still affected by market conditions but only within the participation / protection level range



It's not easy but it is worth it

Trading in the Crystal Ball for tools, organizational buy-in, consistency & discipline is the key to a successful risk management program.

Let's give it a try

Where to go and what to do

Hedge worksheet

Milk per month 637,500
Butterfat test 3.70%

			Futures Mo.	Jun	Jul	Aug
Milk Composition	%	Pounds/mo	To hedge	Jul	Aug	Sep
Advanced Class III	32%	204,000	200,000	$ 16.04	$ 16.37	$ 16.66
Advanced Class IV	46%	293,250	400,000	$ 16.95	$ 17.10	$ 17.30
Class III	7%	44,625	-	$ 16.37	$ 16.66	$ 16.95
Class IV	15%	95,625	-	$ 17.10	$ 17.30	$ 17.52
Butterfat				$ 2.70	$ 2.72	$ 2.74
			Wt. avg	$ 16.64	$ 16.87	$ 17.10
			Class I Differential	$ 3.27	$ 3.27	$ 3.27
			% Class I	65%	65%	65%
			Est. Differential	$ 2.13	$ 2.13	$ 2.13
			Est. Pay price	$ 18.77	$ 18.99	$ 19.23
			Plus Bfat adjustment	$ 0.54	$ 0.54	$ 0.55
			(Less) Deductions	$ (2.75)	$ (2.75)	$ (2.75)
			Net milk check	$ 16.56	$ 16.79	$ 17.03

Settlement

Futures Settlement	Contract	Close	Gain/(Loss)	Ext. Price
Class III	$ 16.04	$ 16.25	$ (0.21)	$ (420)
Class IV	$ 16.95	$ 17.15	$ (0.20)	$ (800)
			Net futures gain/(loss)	$ (1,220)
				$ (0.20)

	July
Closing Uniform (Blend Price)	$ 18.96
Futures adjustment	$ (0.20)
Gross milk price	$ 18.76
Est. gross milk price	$ 18.77

Challenges

Market Data/Information

There is a lot of dairy data – hedging decisions needs to be informed and realistic to be successful.

Depooling

High markets can be challenging as it presents opportunities for some groups to exit the FMMO for a time – that can change ratios.

Basis Issues

This is the toughest of all issues – but good assumptions help.

Utilization

Changing milk demand can impact milk production & utilization in a state.

Option 01

Work with consultant, extension or others to get good information

Option 02

Understand depooling – never hedge more than a set percentage.

Option 03

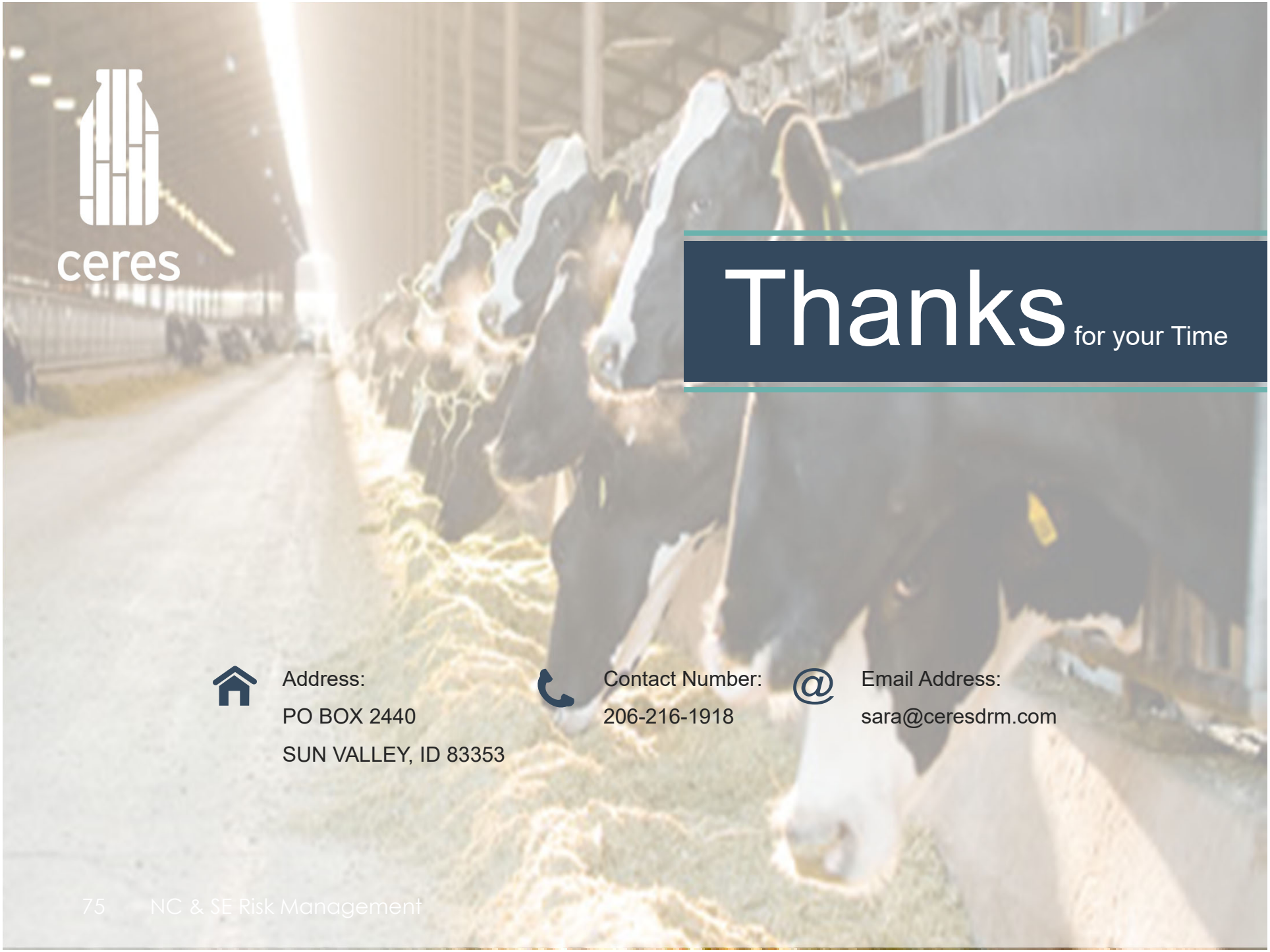
Set realistic goals - adjust.

Option 04

Adjust the model for seasons and changes in utilization. Models are meant to be updated.

That's a wrap

Any final questions



Thanks for your Time

Address:
PO BOX 2440
SUN VALLEY, ID 83353

Contact Number:
206-216-1918

Email Address:
sara@ceresdrm.com