Livestock Risk Protection and Gross Margin Insurance

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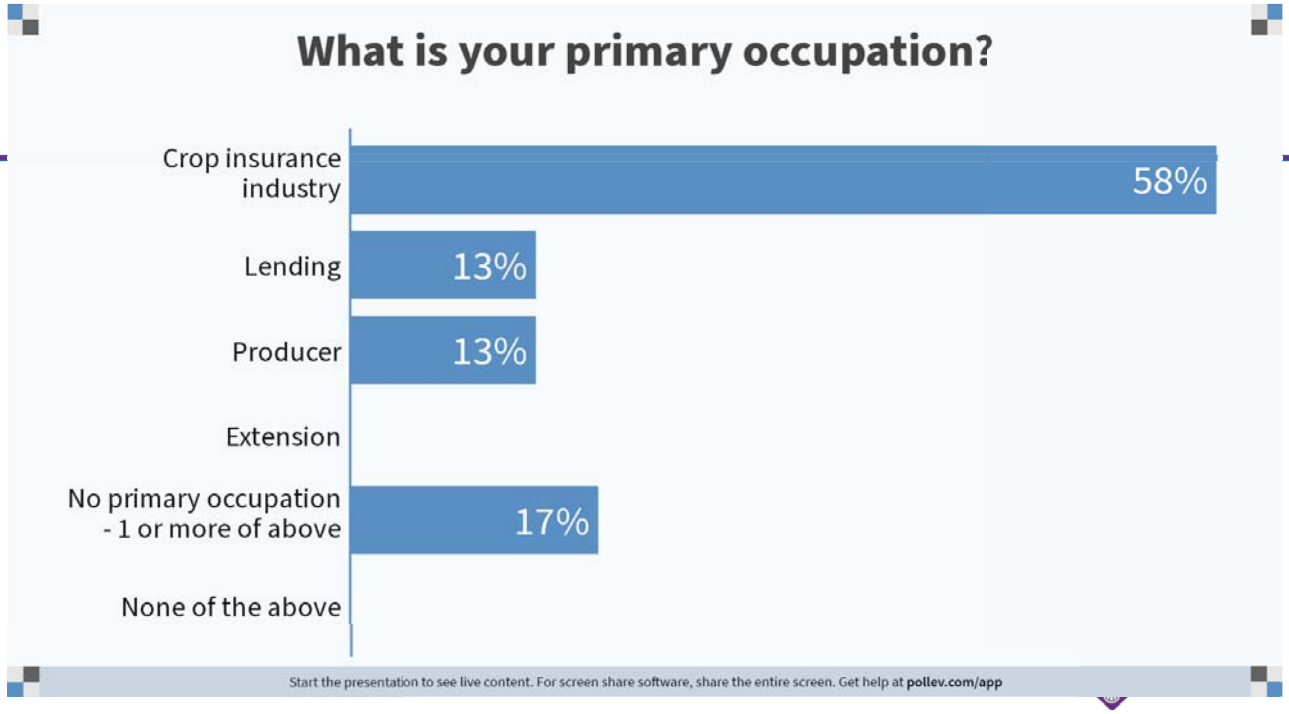

A safety net for cattle?

*"Crop insurance makes me feel like a *****. No pride in it. But that's what this falls gonna be and it sucks"*

"The ones that do take pride in it have either survived by inheritance or luck, not by good decisions."

"We can think of crop insurance as a business partner. Sharing the risk. Sometimes it's the farmer's turn to make it work sometimes it's the public. Everybody eats."

*"At least you have that d*** cattle are a loss and than some."*

"U pay for it. I wish cattle had a safety net"

Source: potentially non-representative farmers and ranchers on Twitter

Cattle safety net

Production Risk:
Events such as disease or weather that can lead to a decline in production/weight gain or mortality

Feed Risk
If crop/forage yield decreases, feed may become expensive or difficult to purchase

Price Risk
Market price might drop, even to the point of not covering the cost of production

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What's the APH for livestock/forage?

- Total bushels ,bales of hay, straw
- Amount of livestock produced
- Rate of gain
- Gallons of milk/head
- Weight Gained
- # of calves produced/ year
- Total weight
- Tonnage

Many livestock insurance options

LRP: Livestock Risk Protection

https://agmanager.info/crop-insurance/crop-insurance-papers-and-information/livestock-insurance-and-lrp

LGM: Livestock Gross Margin

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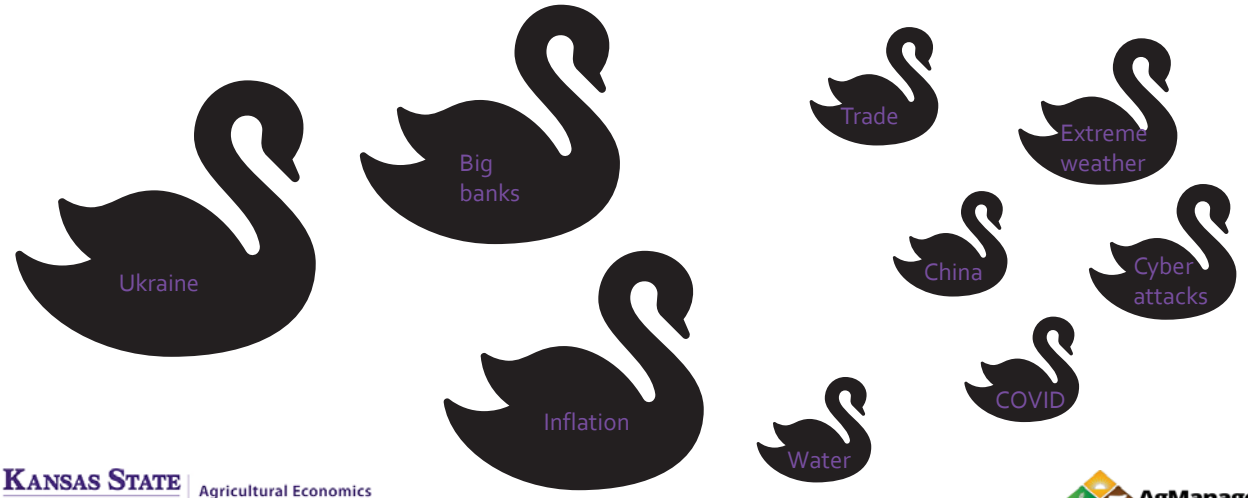
Why manage price risk?



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Insurance agents as commodity brokers and advisers?

- LRP - cattle, swine
- LGM – gross margin
- DRP – price weighted by state milk yields
- Higher coverage crop policies
  - ECO, SCO, MP

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Commodity broker to consultant?

1. Service provider
2. Service provider + educate on insurance products
3. Service provider + educate on insurance products + analyze markets
4. Service provider + educate on insurance products + analyze markets + analyze farm-level breakeven price/price trigger for hedging
5. Service provider + educate on insurance products + analyze markets + analyze farm-level breakeven price/price trigger for hedging + consultant for farm marketing plan

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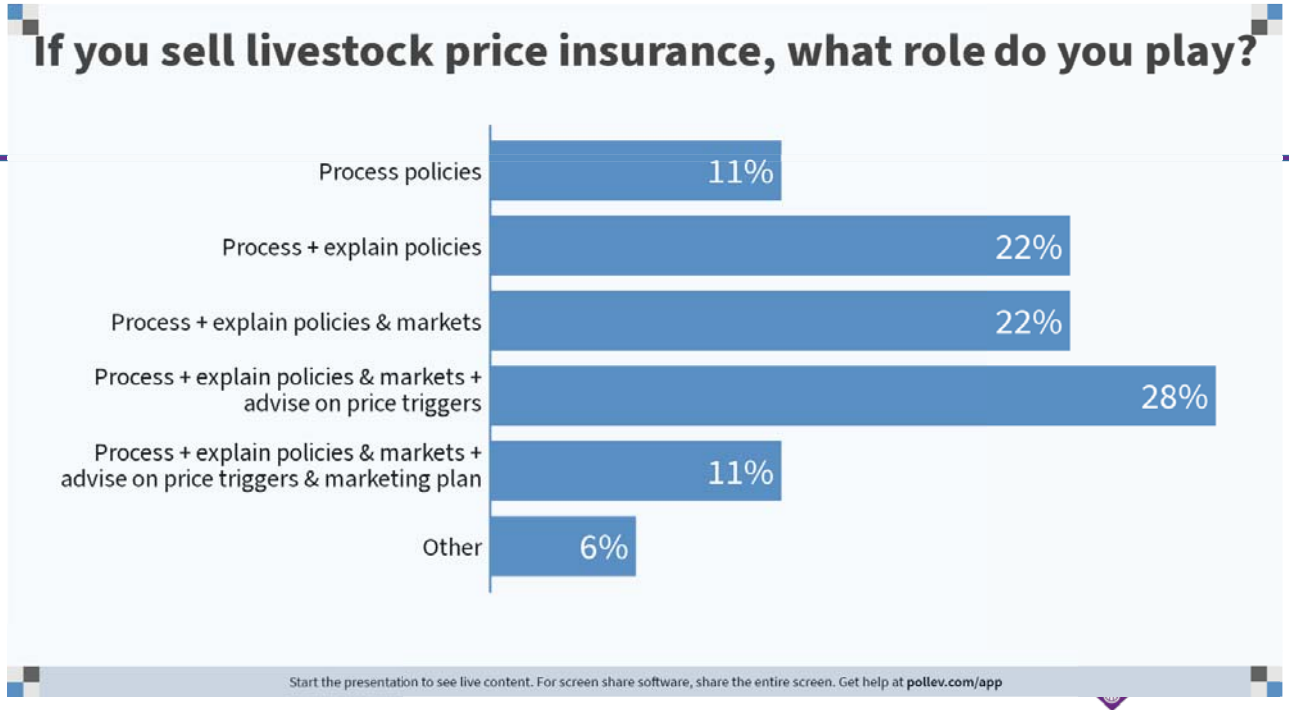

Price management strategies

- Hedge and/or insure when
  - Markets are "good" / price is "high"
  - All (most of) the time – there is always a downside
    - At the highest price available
    - At a price that balances coverage and cost
    - At a breakeven price (when feasible)
    - CAT
  - You think the market is *wrong*
- Long term benefits of Federally-supported insurance

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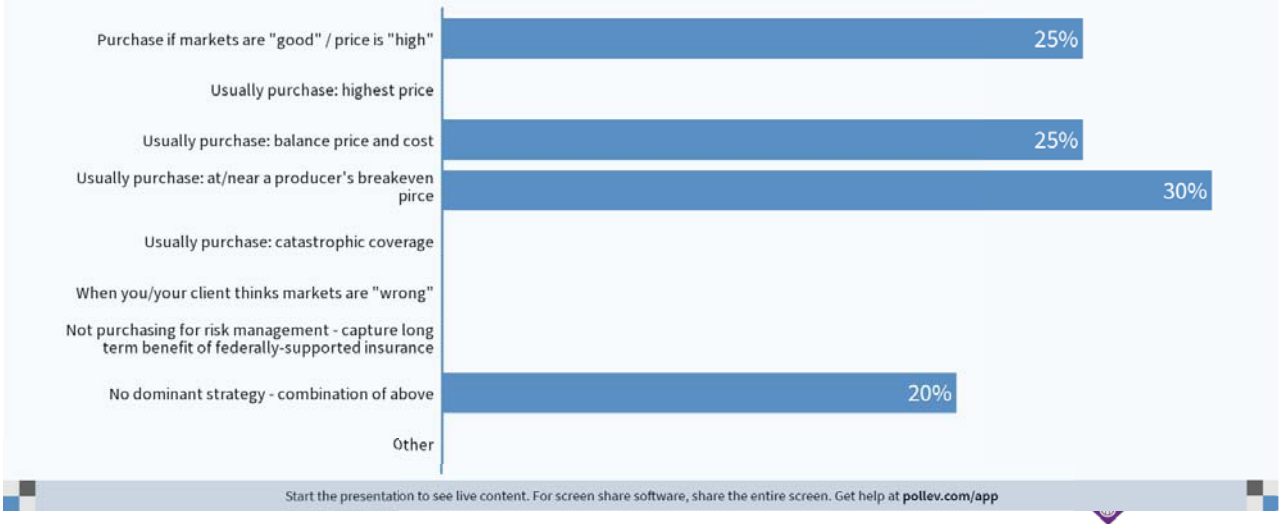
If you sell livestock price insurance, what is the dominant strategy of your clients?



WHAT IS IT?

LRP

If you have feeder or fed cattle and market prices are lower than expected, you can get paid

LGM

If you feed cattle and the difference between live cattle futures and (feeder futures & corn futures) is lower than expected, you can get paid

Payments are based on….

- LRP
  - Feeder cattle under 100-599 lb or 600-1000 lb
    - Calves, steers, heifers, Braham, dairy, unborn
  - Fed Cattle
    - Heifers and steers, 1000-1600 lb
- LGM
  - 2 options: Yearling or calf finishing
  - Gross margin based on fixed weights and feed quantities

https://www.ksre.k-state.edu/news/stories/2020/12/risk-management-for-livestock-producers.html

How guarantees and payments are calculated

LRP

1. Guarantee: producer selected coverage price and target weight

2. Indemnity: (Coverage price – actual price) X target weight

LGM

1. Guarantee (Yearling)

   a. (12.5 cwt X live cattle futures)
   – (7.5 cwt X feeder cattle futures)
   – (55 bu X corn futures)
   =Expected Gross Margin

   b. Producer selects a deductible

2. Indemnity: (Expected gross margin-deductible)-actual gross margin:

(For calf finishing, replace with 11.5 cwt, 5.5 cwt, 52 bu

…are less than expected

Is the actual price/margin **less** than what was expected?

Expected: futures price / margin based on futures for intended market date(s)

Actual: actual price/margin at intended market date

Producer decision

LRP

Major decisions: coverage price, timing of purchase and marketing

Minor decision: weight to insure at

LGM

Major decisions: deductible, timing of purchase and marketing

LRP

Guarantee is based on feeder futures (steers weight 2 600-900 lb)

Jan 2023: $178/cwt

Mar 2023: $180/cwt

June 2023: $192/cwt

Aug 2023: $200/cwt

Guarantee for steers that will be fed out to ~800 lb and sold in January - $178 X 8 = $1424 / head or minimum revenue of about $1399 per head (LRP price – LRP producer premium)

Based on RMA Livestock Report – Oct 18, prices change frequently

LRP: what's at stake?

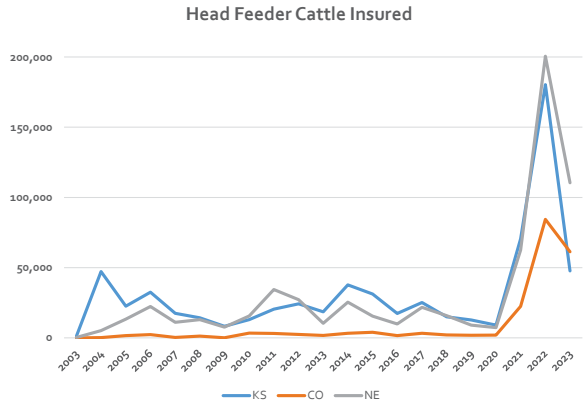
Maximum guarantee for steers that will be fed out to ~800 lb and sold in January - $176 X 8 = $1424 / head or minimum revenue of ~$1,399 per head (when insured at maximum level)

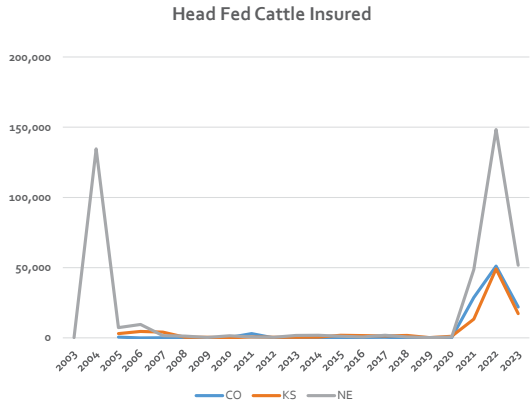
<insert catastrophe here> causes futures to drop to $150 / cwt (around 2020-21 levels). Without insurance revenue is $1200/head, about $224/head lower than expected. For 40 head, this is a loss of $8960.

If prices stay at $178 or go up, you are out the $3.10/cwt premium but may benefit from higher prices.

Based on RMA Livestock Report – Oct 18, prices change frequently

LRP Popularity is increasing





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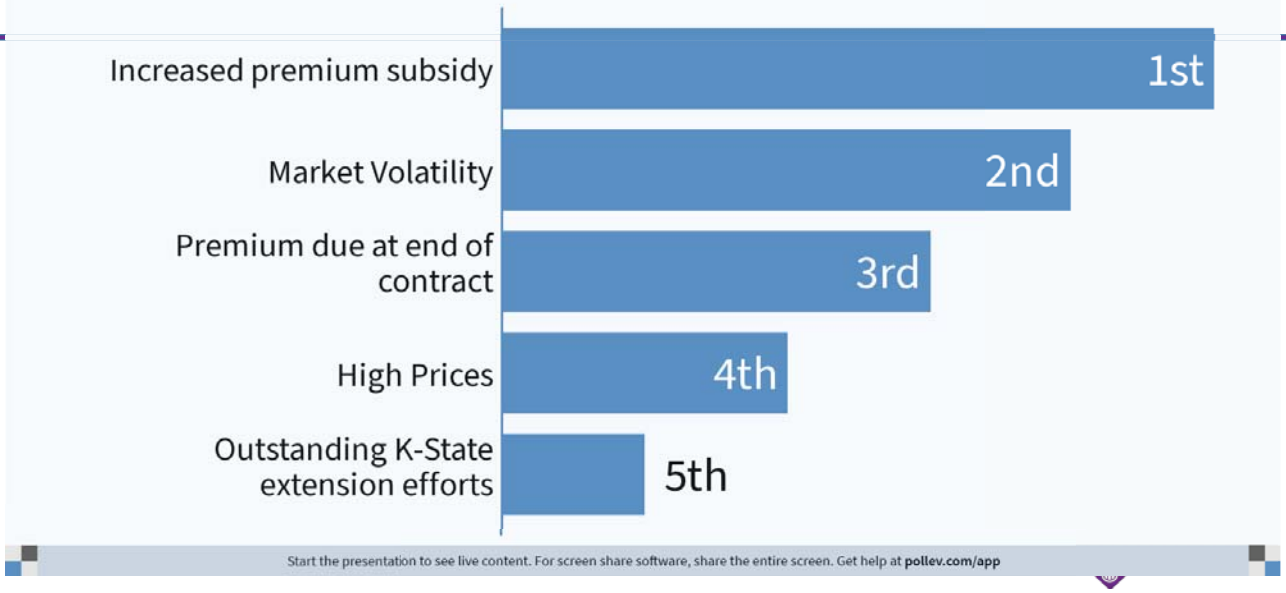
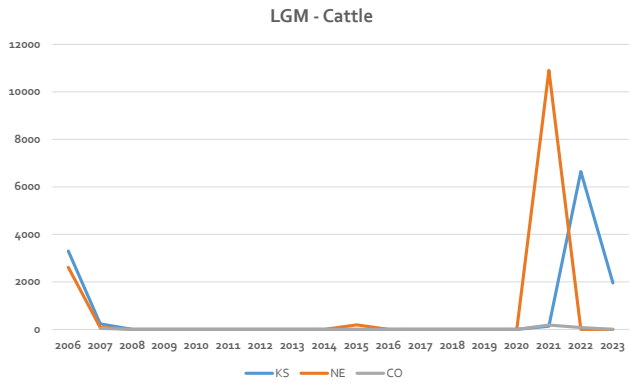
Why did LRP increase so much from 2020?



LGM – largely hasn't caught on yet



Recent performance: LRP loss ratios

	Feeder cattle			Fed Cattle		
	2020	2021	2022	2020	2021	2022
Colorado	0.45	0.53	0.81	1.9	0.04	0.05
Nebraska	0.69	0.37	0.81	1.1	0.05	0.05
Kansas	1.5	0.22	0.63	0.92	0.02	0.04

LRP & LGM: what's not at stake

Basis risk – local markets may not move with national/futures prices

Death loss, low weight gain, etc

Feed/forage costs (current feeder prices may support higher feed costs, to a degree – LGM covers corn futures)

WHEN?

Costs are based on future markets and can vary daily/weekly

Policies are available based on expected sale date and length of policy/endorsement/marketing date

Producer needs to have an idea of acceptable costs/prices and timing beforehand

LRP / LGM vs hedging

- No set contract size – insure any number of head under the limit
- Pay the premium at the end of your insurance contract, not up front
- Lower cost compared to an option due to the Federal government cost share

LRP: other details

- Cattle: 12,000 head per endorsement, max of 25,000 head per year
- Purchase in state where cattle are located
- File for indemnity within 60 days, cannot sell cattle more than 60 days before end of coverage period (without approval)
  - But not required to sell by end of coverage period
- Indemnities paid in 30 days after receipt of "claim form"
- Actual weight (gain) doesn't affect target weight/payouts but can be a separate source of risk

LGM: other details

- If LGM timing is too different from the farm, may add additional risk
- Can purchase once a week (at most)
- "Targeted marketings"
- Premium subsidy only available from 2021, 18-50%
- No minimum, maximum number of head around 10K

Using LRP - example

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Kansas Feeder/Backgrounding Model

- Feeding post-wean calves
- Calves are considered a sunk cost- already own them
- Will not be factoring the costs associated with the cows/ farm
  - Utilities
  - Machinery depreciation
- The goal is making the heaviest calf for the price

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Feeding Kansas Calves

- 500 lb -> 740 lb
- 120 days on feed, 2 lb daily gain
- Feeding an average of 12 lb of grain and co-products
- Access to large round bales of bluestem grass (good)
  - Eating 2% bodyweight on average
- 120 lb of supplement – vitamins, minerals

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Kansas Right Now

- Purchasing Large Round Bluestem (Good) – $75-$150 per ton
- Assuming
  - Buying all your hay
  - $125 per ton
  - $6.75 per bushel corn
- Current conditions
  - Total feed cost per calf – $185
  - Total feed cost per cwt gained – $77.08
  - Recent AMS KS feeder price per cwt – ~$177

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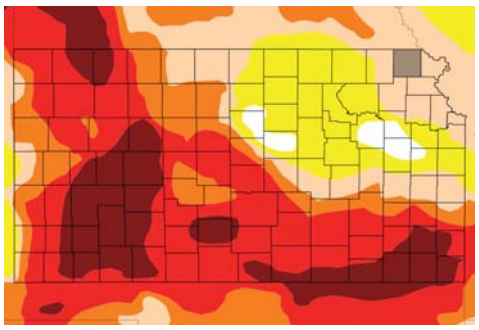
Kansas Drought and Hay Prices

- Kansas hay market in the last 20 years
- Abnormally dry conditions – $2 per ton per year increase
- Extreme – $6 per ton per year increase
- Exceptional – $35 per ton per year increase
- Majority of Kansas producers are in a region classified under severe drought

Estimated Hay Price Impacts of Drought

- Extreme Drought
  - Hay prices $131 per ton
  - Total feed cost per calf – $189
  - Total feed cost per Cwt gained – $78.75
- Exceptional Drought
  - Corn Prices $7.50 per bushel
  - Hay prices $160 per ton
  - Total feed cost per calf – $217.72
  - Total feed cost per Cwt gained – $90.72
  - Comparison to feeder prices



The point…

- Oct 12 steers weight 2 LRP contracts
  - Jan 23 – 13 weeks - $176 /cwt
  - March 23 – 21 weeks - $179/cwt
  - Feed costs under extreme drought: ~$91/cwt (or much higher?)
- Profits more sensitive to high feeder cattle prices than high feed costs: LRP can protect a producer's investment in feed/forage under a drought/high cost conditions

LRP - Analysis

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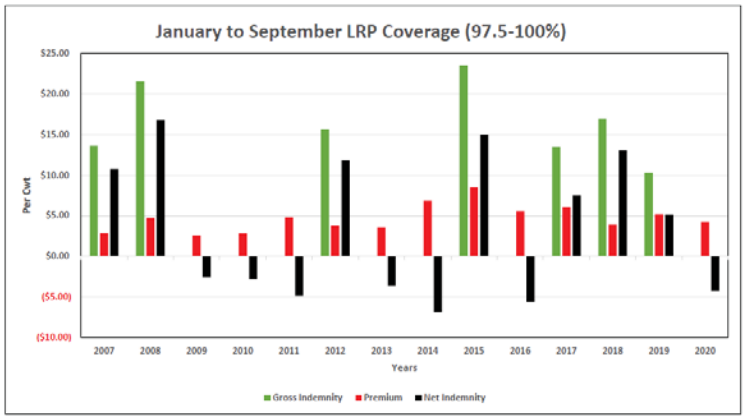
LRP returns

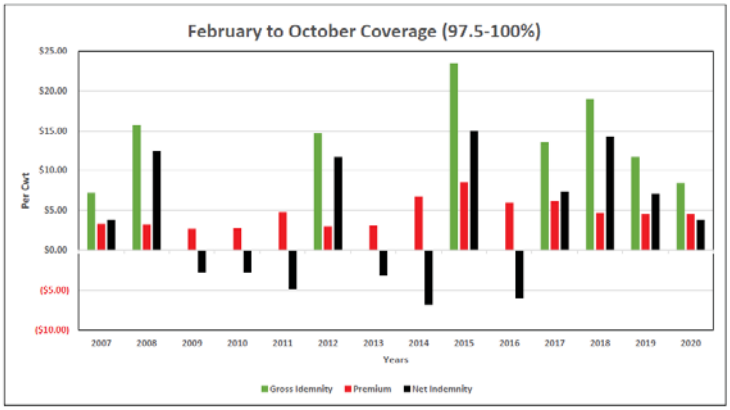
- Feuz and Haiviland, statistical analysis forthcoming in *Western Economic Forum*
- Higher coverage levels
  - Strong correlation with likelihood of a positive return & average net return
  - Vast majority of LRP contracts are for highest coverage levels
- Contract length
  - Impact not consistent over time
- Contract Month
  - Returns not consistent across over coverage length and month

Historic performance: high coverage



Note: This graph shows LRP gross indemnities, premiums, and net indemnities (gross indemnity minus premium) for LRP endorsements purchased for a producer that calves in January and sells in September after backgrounding. This data is the average of all endorsements available at the 97.5 to 100% coverage level, with an endorsement length 34 weeks. Gross indemnity is the LRP payment per cwt, calculated using the difference between coverage price (expected/futures price times coverage level) and the actual price, when actual price is less than the coverage price. Premium is cost for purchasing the LRP endorsement.

Historic performance: high coverage



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Estimating using Understanding Markets Tool developed by Bozic LLC

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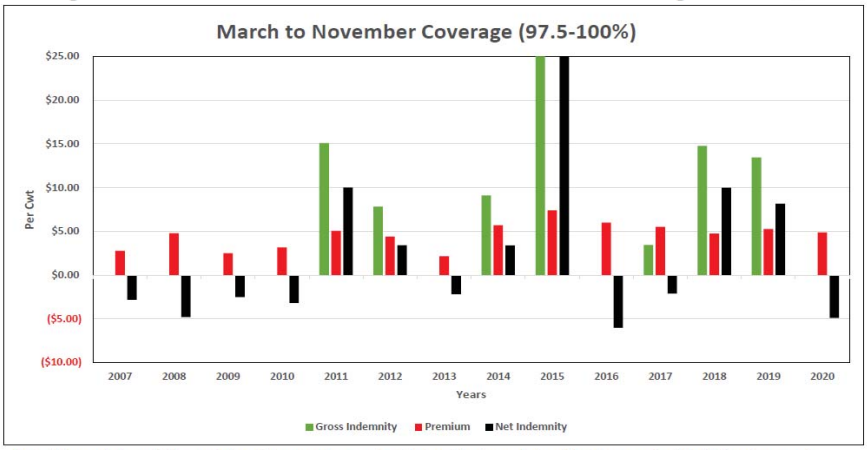
Historic performance: high coverage



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***2015 net indemnities were $36.41 per CWT, the y-axis maximum is set to $25/cwt for easier comparison across years and scenarios.**

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Estimating using Understanding Markets Tool developed by Bozic LLC

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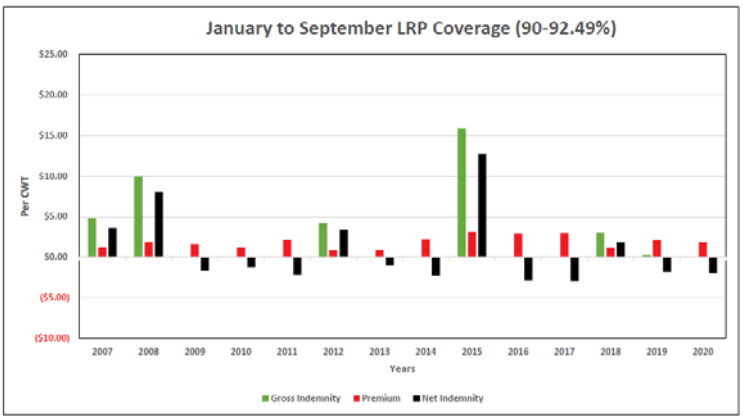
Historic performance: low coverage



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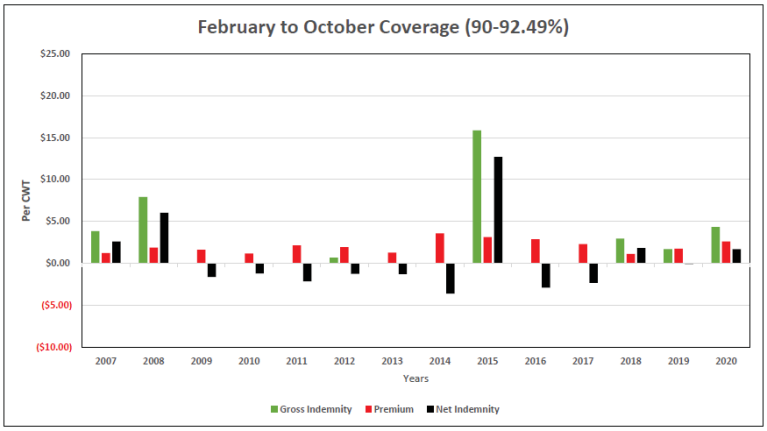

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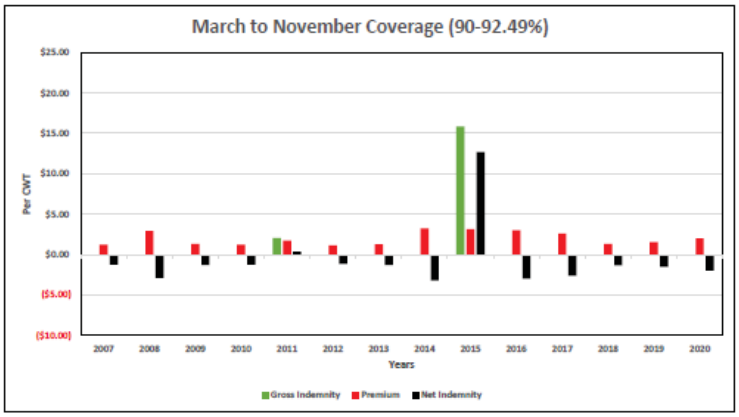

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LRP January endorsements

- LRP average outcomes for 34-week feeder cattle endorsements purchased in January

Coverage level	Gross Indemnity	Premium	Net Indemnity
Higher Coverage: 97.5-100%	$8.21	$4.67	$3.55
Medium coverage: 95%-97.49%	$5.55	$3.31	$2.24
Low coverage 90-92.49%	$2.73	$1.87	$0.85

LRP Feb. Endorsements

LRP average outcomes for 34-week feeder cattle endorsements purchased in February

Coverage level	Gross Indemnity	Premium	Net Indemnity
Higher Coverage: 97.5-100%	$8.13	$4.60	$3.53
Medium coverage: 95%-97.49%	$6.47	$3.73	$2.74
Low coverage 90-92.49%	$2.67	$2.05	$0.61

LRP: March Endorsements

LRP average outcomes for 34-week feeder cattle endorsements purchased in March

Coverage level	Gross Indemnity	Premium	Net Indemnity
Higher Coverage: 97.5-100%	$7.15	$4.61	$2.54
Medium coverage: 95%-97.49%	$3.95	$3.59	$0.36
Low coverage 90-92.49%	$1.28	$1.97	$-0.69

LRP: April Endorsements

LRP average outcomes for 34-week feeder cattle endorsements purchased in April

Coverage level	Gross Indemnity	Premium	Net Indemnity
Higher Coverage: 97.5-100%	$4.74	$4.45	$0.29
Medium coverage: 95%-97.49%	$2.45	$3.46	$-1.01
Low coverage 90-92.49%	$0.36	$2.00	$-1.64

https://agmanager.info/crop-insurance/livestock-insurance-papers-and-information/historic-performance-livestock-risk

Historic performance summary

- Highest **historic** price volatility/payouts in October, lowest in December (in these examples)
- A few consecutive years with no indemnities is common even under high coverage policies
- If a producer cares about income benefits of LRP, consider purchasing high coverage policies

LRP & LGM: The bottom line

- Policies are now more favorable
  - "Small producer" friendly: no minimum #, pay after you get your calf check
  - High coverage vs low coverage
- Looking forward
  - Safety net for livestock may be expanding
  - Role of insurance agent in managing livestock price risk?
  - Livestock insurance as collateral?

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Questions?
Comments?
Thank you!

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General Livestock and LRP Resources

https://agmanager.info/crop-insurance/livestock-insurance-papers-and-information

https://www.agmanager.info/crop-insurance

https://www.rma.usda.gov/Policy-and-Procedure/Insurance-Plans/Livestock-Insurance-Plans

https://www.agmanager.info/livestock-meat/livestock-marketing-charts/

https://agmanager.info/2020-risk-and-profit-conference-presentations/hedging-kansas-live-cattle-summary-outcomes-over-past

https://agmanager.info/k-state-feeder-cattle-risk-management-tool

Documentation - Methodology

- *Understanding Data and Markets* tool developed by Bozic, LLC
- Iowa State Backgrounding Calculator
- Data sources:
  - CME Group
  - Macrotrends.com
  - Tradingview.com
  - Backgrounding costs based on producer interviews and KSU and other extension data

LGM - Appendix

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LGM – current and last year's expected gross margin $$$ / cwt

CURRENT (Aug 11 22)	2 Oct 22	3 Nov 22	4 Dec 22	5 Jan 23	6 Feb 23	7 Mar 23	8 Apr 23	9 May 23	10 June 23	11 July 23
Calf	389.55	444.81	513.52	585.66	565.77	535.65	505.99	452.07	407.09	394.34
Yearlings	303.28	310.73	285.98	250.80	248.53	247.15	251.38	215.58	179.85	171.53

LAST YEAR CALF	2 Oct 21	3 Nov 21	4 Dec 21	5 Jan 22	6 Feb 22	7 Mar 22	8 Apr 22	9 May 22	10 June 22	11 July 22
Expected	361.47	416.54	483.83	518.77	501.21	475.70	450.55	395.76	350.14	334.54
Actual	339.74	437.13	562.34	599.59	555.03	487.57	420.47	401.35	348.57	N/A

LAST YEAR YEARLING	2 Oct 21	3 Nov 21	4 Dec 21	5 Jan 22	6 Feb 22	7 Mar 22	8 Apr 22	9 May 22	10 June 22	11 July 22
Expected	272.85	276.18	253.58	222.65	216.83	215.58	221.95	189.95	157.53	149.45
Actual	264.23	328.65	338.65	280.45	311.05	258.53	219.90	166.40	127.78	N/A

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Data collected from RMA Livestock Report in August 2022

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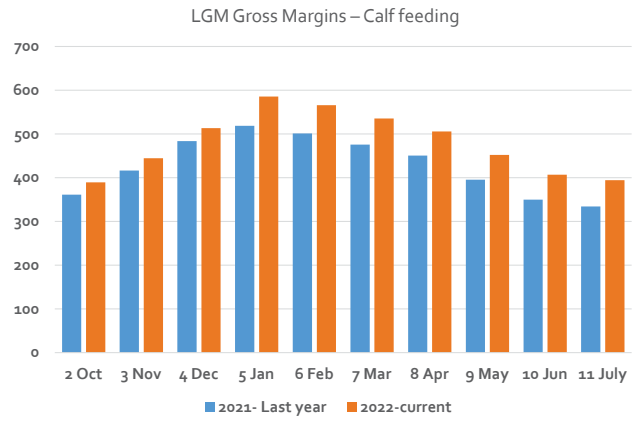
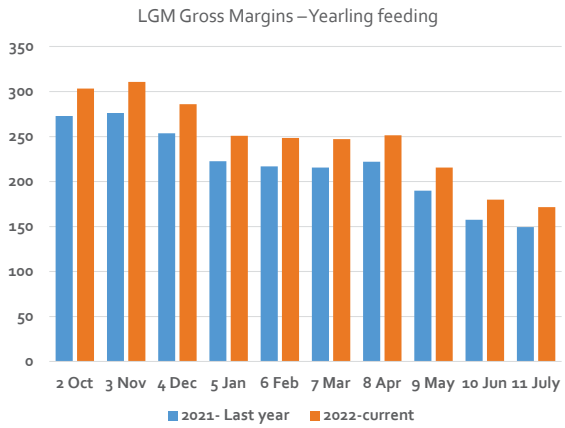
LGM gross margins higher than last year





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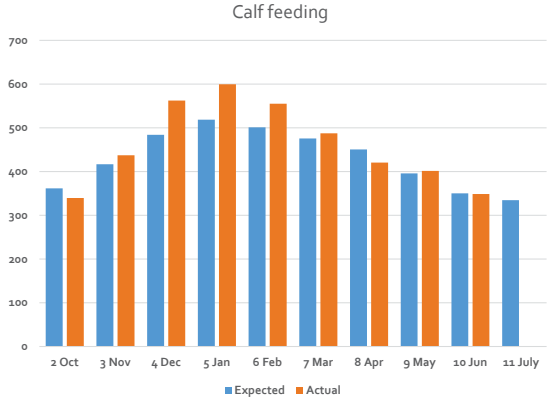
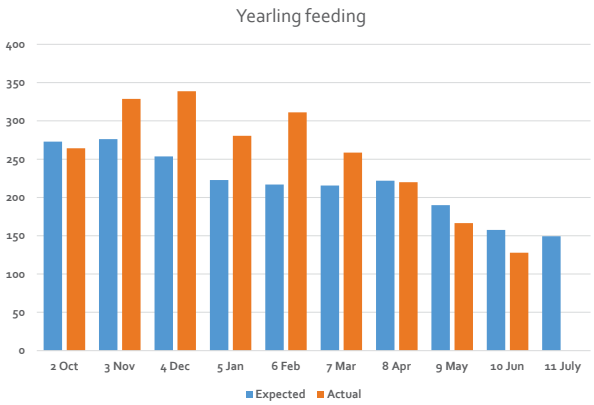
No/small payouts over last year (stable markets)



Potential (small) indemnities: Oct, April, June



Potential (small) indemnities: Oct, April, May, June

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LGM gross margin: what's at stake

You plan to purchase calves to feed and market in July. You also purchase corn*.

Gross margin prices:

July* live cattle futures: $153

March corn futures: $6.22

November feeder futures: $190

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Data collected from RMA Livestock Report in August 2022

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LGM gross margin: what's at stake

You plan to purchase calves to feed and market in July. You also purchase corn*.

Gross margin calculation:

July* live cattle futures: $153 X 11.5 cwt = $1759.50

-March corn futures: $6.22 X 52 bushels = $323.44

-November feeder futures: $190 X 5.5 cwt = $1045

= $391/ per head

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Data collected from RMA Livestock Report in August 2022

*uses updated futures, doesn't perfect match most recent LGM July 2023 offer

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LGM gross margin: what's at stake

Feed price increase

Corn prices increase 20% to $7.46, everything else stays the same

Actual margin calculation:

July* live cattle futures: $153 X 11.5 cwt = $1759.50

-March corn futures: $7.46 X 52 bushels = $388.128

-November feeder futures: $190 X 5.5 cwt = $1045

= $326 per head actual margin (may trigger an indemnity depending on deductible)

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Data collected from RMA Livestock Report in August 2022

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LGM gross margin: what's at stake

Feeder prices increase

Feeder prices increase 20% to $228/cwt, everything else stays the same

Actual margin calculation:

July* live cattle futures: $153 X 11.5 cwt = $1759.50

-March corn futures: $6.22 X 52 bushels = $323.44

-November feeder futures: $228 X 5.5 cwt = $1254

= $182.06/ per head

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LGM gross margin: what's at stake

Live cattle price decrease

Live cattle prices decrease 20% to $122.40, everything else stays the same

Actual margin calculation:

July* live cattle futures: $122.40 X 11.5 cwt = $1407.60

-March corn futures: $7.46 X 52 = $388.128

-November feeder futures: $190 X 5.5 cwt = $1045

= -25.53 per head actual margin (negative margin, very large indemnity)

LRP - Appendix

LRP Example: Costs

You calve in February and sell in October. The current LRP expected (futures) price is $170.67 (Class 2/>600 lb steers, 21 week endorsement). Below are a range of potential coverage prices and premium costs (per cwt)

Coverage price	Coverage level	Total premium	Producer premium
$169.30	99.2%	$7.58	$4.39
$165.30	96.9%	$5.56	$3.82
$161.30	94.5%	$4.01	$2.41
$151.30	88.7%	$1.59	$0.87

Premium estimate from April 4 2022, only an insurance agent can provide official premiums

LRP Example: High Coverage Payouts

You calve in February and sell in October. The current LRP expected (futures) price is $170.67 per cwt and you select the highest level of coverage (99.2% or coverage price of $169.30). Below are some potential outcomes (all per cwt)

Coverage price	Actual price	Producer premium	Total Indemnity
$169.30	$140	$4.39	$29.30 / cwt
$169.30	$150	$4.39	$19.3 / cwt
$169.30	$160	$4.39	$9.30 /cwt
$169.30	$200	$4.39	$0

Premium estimate from April 4 2022, only an insurance agent can provide official premiums

LRP Example: Low Coverage Payouts

You calve in March and sell at wean in September. The current expected (futures) price is $170.67 per cwt and you select the a of coverage level of 88.7% or coverage price of $151.30). Below are some potential outcomes (all per cwt).

Coverage price	Actual price	Producer premium	Total Indemnity
$151.30	$140	$0.87	$11.30 / cwt
$151.30	$150	$0.87	$1.30 / cwt
$151.30	$160	$0.87	$0 / cwt
$151.30	$200	$0.87	$0

Premium estimate from April 4 022, only an insurance agent can provide official premiums