

Insurance Options for Cow-Calf Producers

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2021 KSU Risk and Profit Conference

Outline

- Background
- Limited-use policies
- PRF overview and participation trends
 - Self insurance comparison - intro
- LRP overview
- LRP analysis: historic performance, indemnity experience, expected vs actual intro

Why formally insure?

- Loan access / repayment
- Vulnerability to drought
- Protect operation during herd expansion
- Implicit (or explicit cost) of self insurance is increasing
- Federal insurance options are becoming more favorable



<https://www.ksre.k-state.edu/news/stories/2021/01/beef-cattle-winter-ranch-management-series.html>

Cow-calf insurance options by type of risk

Production Risk:

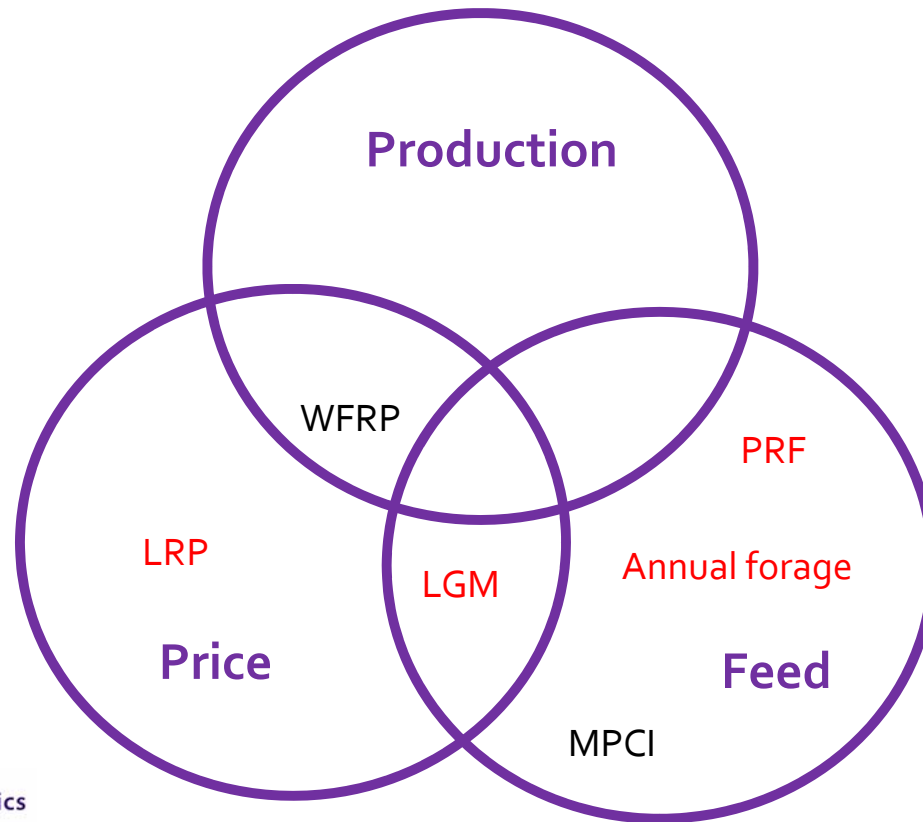
Events such as disease or weather that can lead to a decline in production/weight gain or mortality

Price Risk

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

Feed Risk

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



Policies in red are never triggered by farm-specific losses. This can have some advantages but basis risk may be an issue

Background

- Cattle production is larger than crop production in KS based on sales \$\$\$, but insurance use is limited
- **Limited use:** WFRP, LGM
- **Moderate use:** PRF, Annual Forage, LRP
- **High use:** MPCl

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

LGM Summary

- Insures livestock (meat/milk) price-feed gross margin
- Relatively simple, index-policy based on futures prices
- Was used heavily in 2011 by KS dairy farms, other livestock use very limited



WFRP-Whole Farm Revenue Protection

- Insures **all** farm revenue with up to \$2 million in livestock revenue
- Works best for (somewhat) diversified, smaller operations
- Tax records required
- High initial time investment in writing WFRP policies
- Available but limited use in KS
- For more information:

https://www.agmanager.info/sites/default/files/pdf/RMA_WFRP_Slides_2.pdf

<https://www.rma.usda.gov/en/Fact-Sheets/National-Fact-Sheets/Whole-Farm-Revenue-Protection-2020>



<https://www.sedgwick.k-state.edu/gardening-lawn-care/fruits-vegetables-nuts/vegetable-gardening.html>

Pasture, Rangeland, and Forage Insurance

- USDA tracks precipitation in an area (grid), and **sends payments automatically** when levels are below guarantee
 - Payments triggered by **lack of precipitation (rain or snow)** relative to historic levels
- Important considerations
 - *If you experience low rainfall in your fields but the grid rainfall levels are different, there is a chance you may not receive an indemnity*
 - Producers must insure at least 2 2-month intervals: summer months typically correspond with higher rainfall-related risk (May-July), winter months tend to have higher indemnities
 - Grid selection is critical for many operations: discuss with an agent!

Pasture, Rangeland, and Forage Insurance decisions

- Designed so the producer comes out ahead in the long run
 - Historically, would have returned at least \$1.45 per acre based on historic rainfall depending on the coverage level
 - Vandever (2016)
- General principles (Cho and Brorsen 2021)
 - Reduce risk by selecting high coverage levels, lower productivity factor, spring and summer intervals
 - Maximize returns by selecting high coverage levels, high productivity factor, winter intervals
- Decision support tool: <https://prodwebnlb.rma.usda.gov/apps/prf>

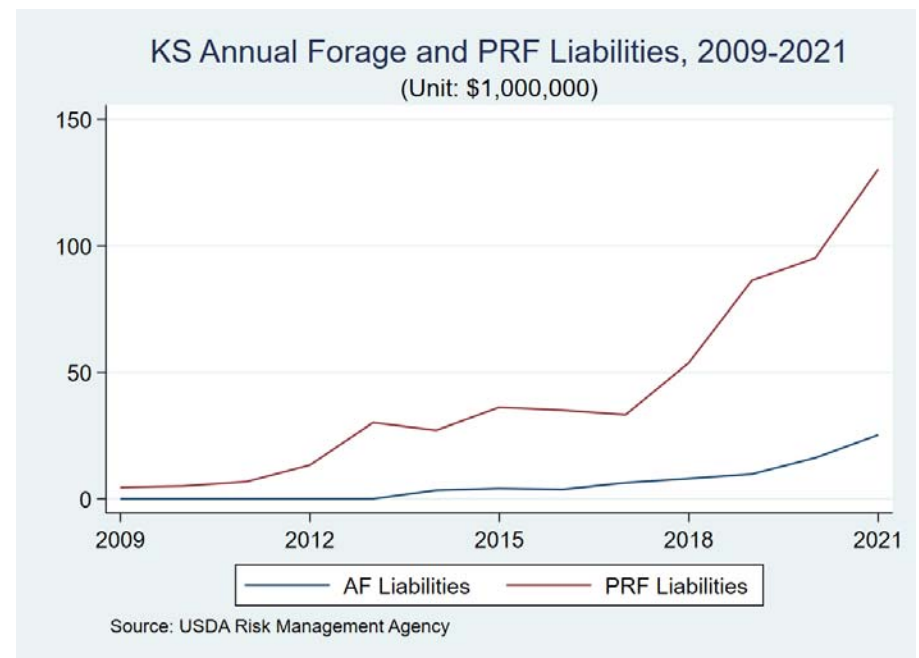
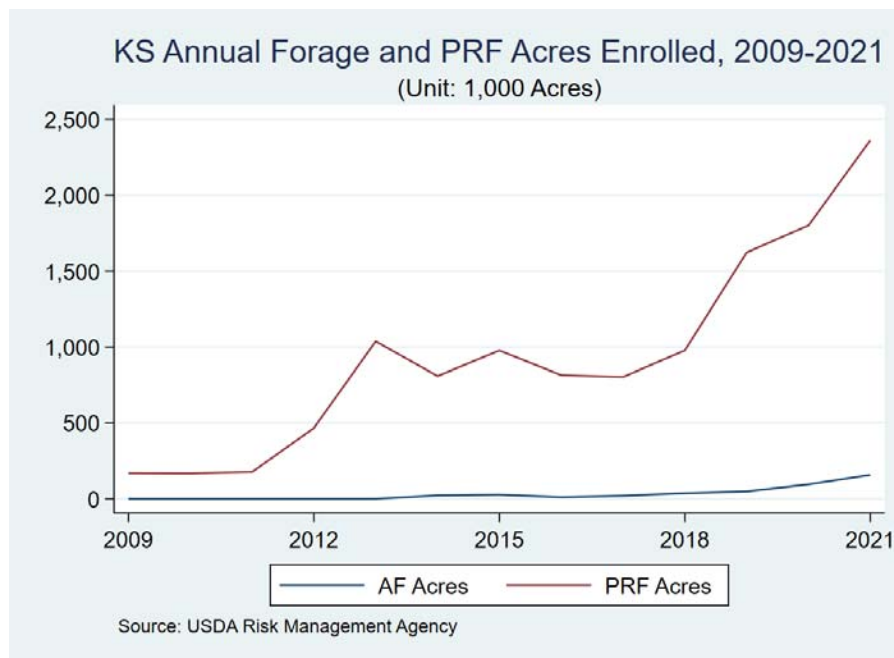
Annual Forage

- Covers annually planted acreage, used as feed and forage for livestock
- Indemnities are triggered by a rainfall index
 - Sub-state county base values calculated using methodology similar to PRF
- KS is eligible for "dual use" with small grains
- Participation
 - 2021: 153,670 acres with \$24.6 million liabilities
 - 2020: 94,177 acres with > \$16 million liabilities



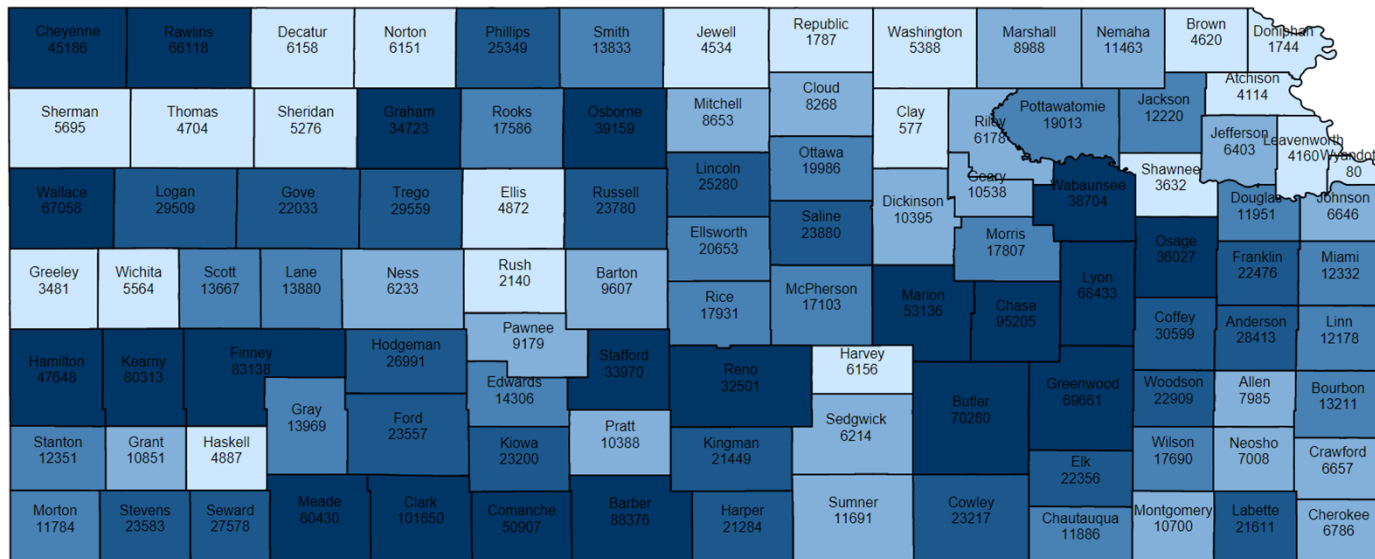
<https://www.southwest.k-state.edu/documents/2018-JohnHolman-Annual-Forages.pdf>

PRF and AF use increased substantially in 2021

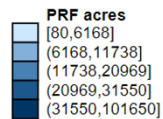


PRF acres enrolled in 2021

Kansas 2021 PRF acres

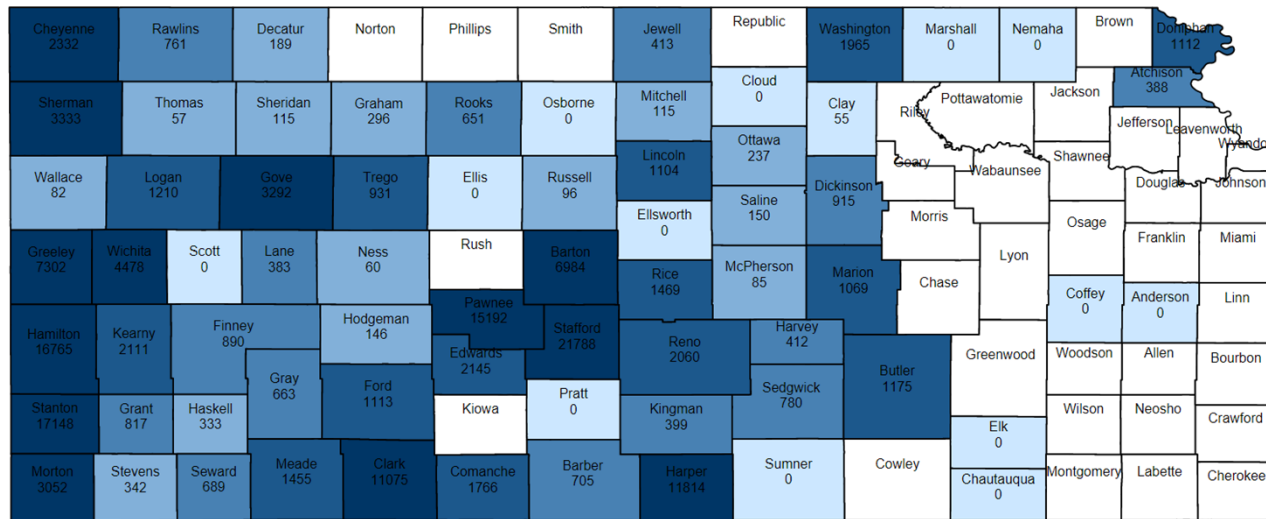


Source: USDA RMA and USDA NASS. PRF data is RMA reported levels for 2021

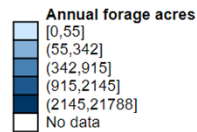


Annual Forage more common in western KS

Kansas 2021 Annual forage Acres

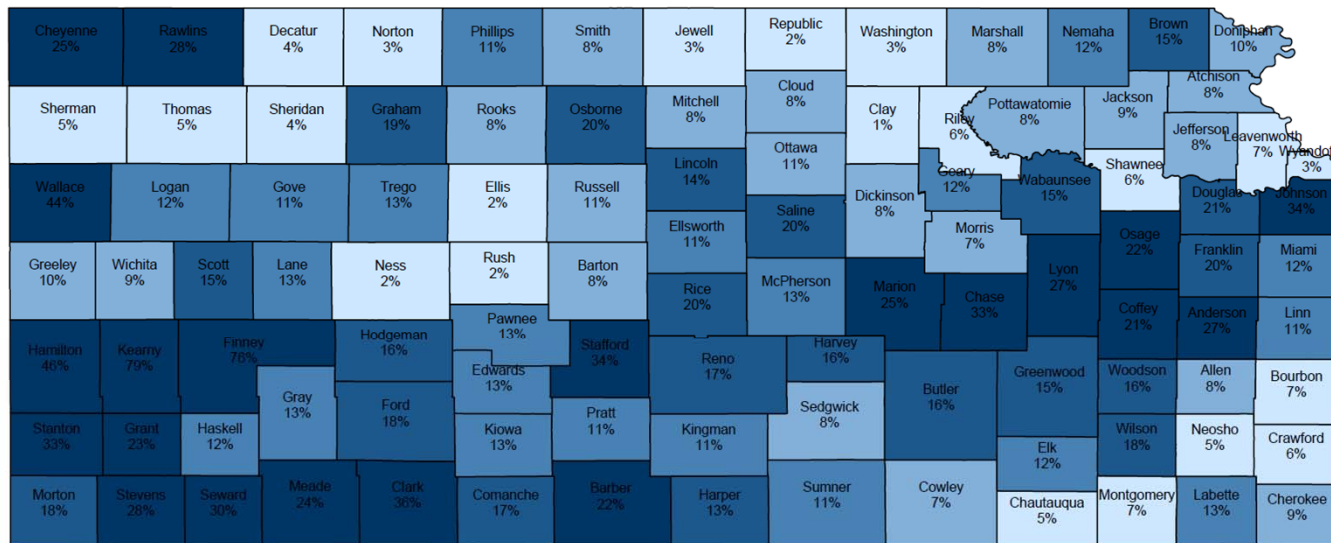


Source: USDA RMA and USDA NASS. Annual forage acres are RMA reported levels for 2021. Enrollment in some counties may not be reported by RMA due to disclosure issues.

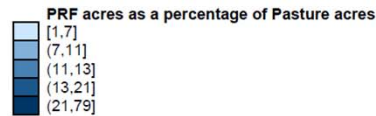


PRF acres equivalent to 20-40% of acreage in some counties

Estimated Ratio of PRF acres to Pasture acres in Kansas

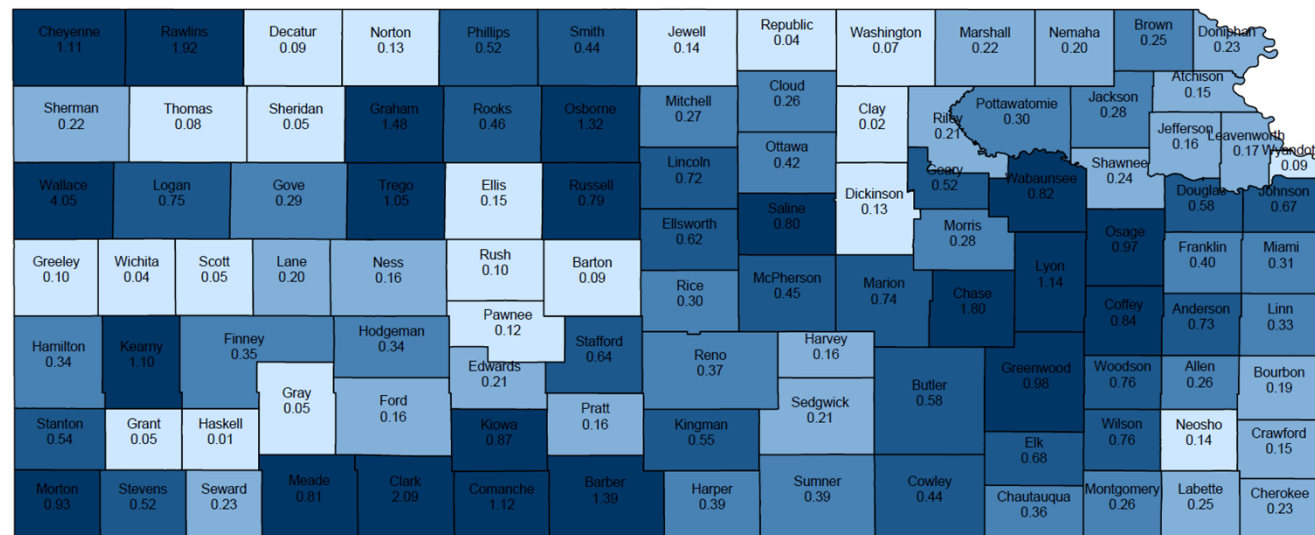


Source: USDA RMA and USDA NASS. Pasture acres are from the 2017 Census of Agriculture and PRF data is RMA reported levels for 2021

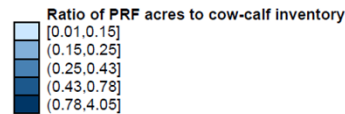


Ratio of PRF to cattle inventory implies similar patterns

Estimated Ratio of PRF acres to Cow-calf Inventory in Kansas



Source: USDA RMA and USDA NASS. Cow/calf inventory (head) is from the 2017 Census of Agriculture and PRF data is RMA reported levels for 2021



PRF vs self-insurance costs (introduction)

- Cost and yield of hay in Kansas (forage)
 - 2012 - \$196 / ton, 1.65 tons per acre
 - 2015 - \$106 / ton, 2.4 tons per acre
 - 2020 - \$127 / ton, 2.28 tons per acre
- Approx. cost of 2021 PRF: (Hay, non-irrigated, non-organic, Washington County, grid 23433)
 - High coverage ~\$15-20/acre
 - Medium coverage ~ \$10-12/acre
 - Low coverage ~\$5-\$8
- 2021 Ag Manager non-irrigated alfalfa returns (Nov 2020), ~\$200 / acre

PRF vs self-insurance costs (introduction)

- Most operations keep a buffer, about 1 month production (10% “opportunity cost” can be compared to PRF costs)
- Hay “inventory depreciation”
 - Alfalfa hay from “premium” to “fair” could lose \$100 / ton value
- Important considerations
 - Opportunity cost of selling cows/calves in response to drought
 - Opportunity cost of (often-implicit) lower stocking rates
 - Future work....

Livestock Risk Protection (LRP) review

- Protects against declines in (expected) market prices
- CME index for feeder cattle prices and AMS for fed cattle
- First apply for the policy (one time), then select an endorsement
- Premiums depend on expected final market prices of livestock, change frequently
- Purchase in state where cattle are located

LRP details

- Length of endorsement
 - 13-52 weeks, at 4-5 week intervals
- Coverage level (70-100)
- Head, type of cattle, weight
 - Feeder: under 600 and 600-900
 - Fed: 1000-1400
- File for indemnity within 60 days, cannot sell cattle more than 30 days before end of coverage period with approval
 - But not required to sell by end of coverage period

LRP improved in 2021

- For feeder cattle, fed cattle, swine
- Increased premium subsidy
- Increased head limits
 - For cattle up to 6000 per endorsement, 12,000 annually
 - Modifying ownership requirements for last 60 days
 - Unborn livestock can be insured

| Coverage Level (Percent) | Previous Subsidy Rate (Percent) | Revised Subsidy Rate (Percent) |
|--------------------------|---------------------------------|--------------------------------|
| 95-100 | 25 | 35 |
| 90-94.99 | 30 | 40 |
| 85-89.99 | 35 | 45 |
| 80-84.99 | 35 | 50 |
| 70-79.99 | 35 | 55 |

<https://www.rma.usda.gov/News-Room/Press/Press-Releases/2020-News/USDA-Announces-Increased-Subsidies-and-Other-Improvements-to-the-LRP-Program>

Representative farm & LRP policy

Representative Farm

- Cow-calf operation in Kansas
- Normally calves 83 head of steers
- Target Weight: 600lbs (6.0cwt)
- No/little backgrounding

Representative Policy

- LRP Policy
- Begins April 1st
- Ends October 28th
- Expected to sell through October
- 30-week endorsement
- Percentage Covered 95.59%

LRP works like a PUT, but cheaper



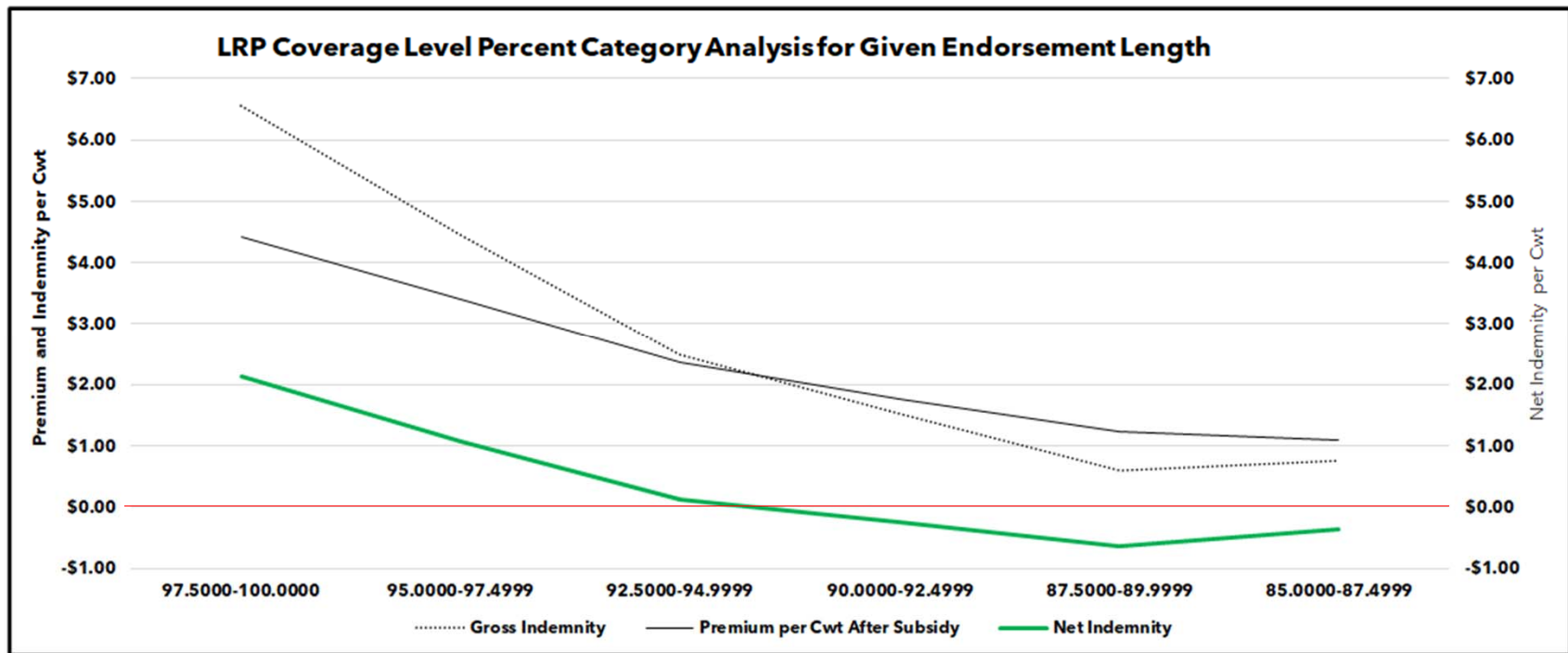
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Representative farm comes out ahead with LRP over time (as designed)

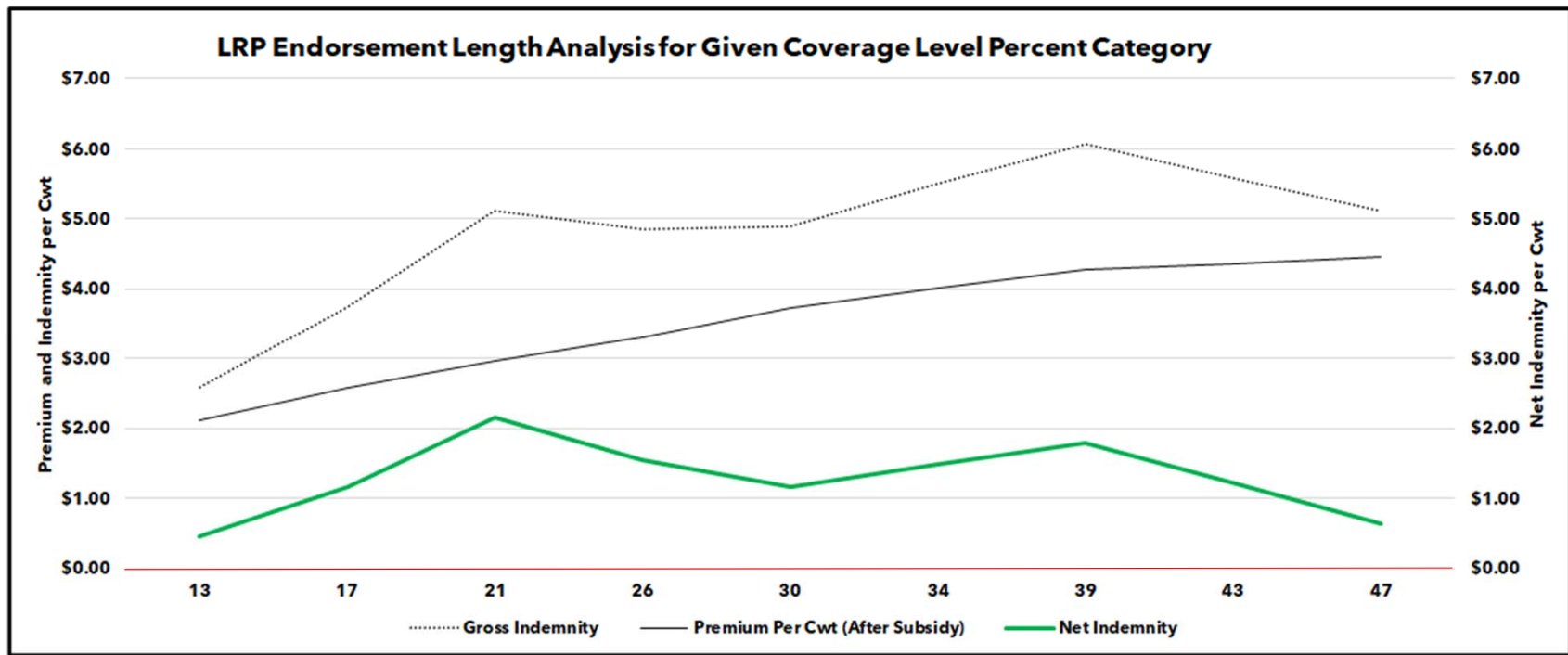
Historical Performance of representative farm from
2007-2021

| Risk Management Outcomes | | |
|----------------------------|-----------------|------------------|
| Measure | Average Per Cwt | Average Per Head |
| Expected Ending Value | \$166.17 | \$997.02 |
| Actual Ending Value | \$161.97 | \$971.79 |
| Producer Premium | \$3.30 | \$19.79 |
| Gross Indemnity | \$6.83 | \$40.96 |
| Net Indemnity | \$3.53 | \$21.17 |
| Return on Producer Premium | | 107% |

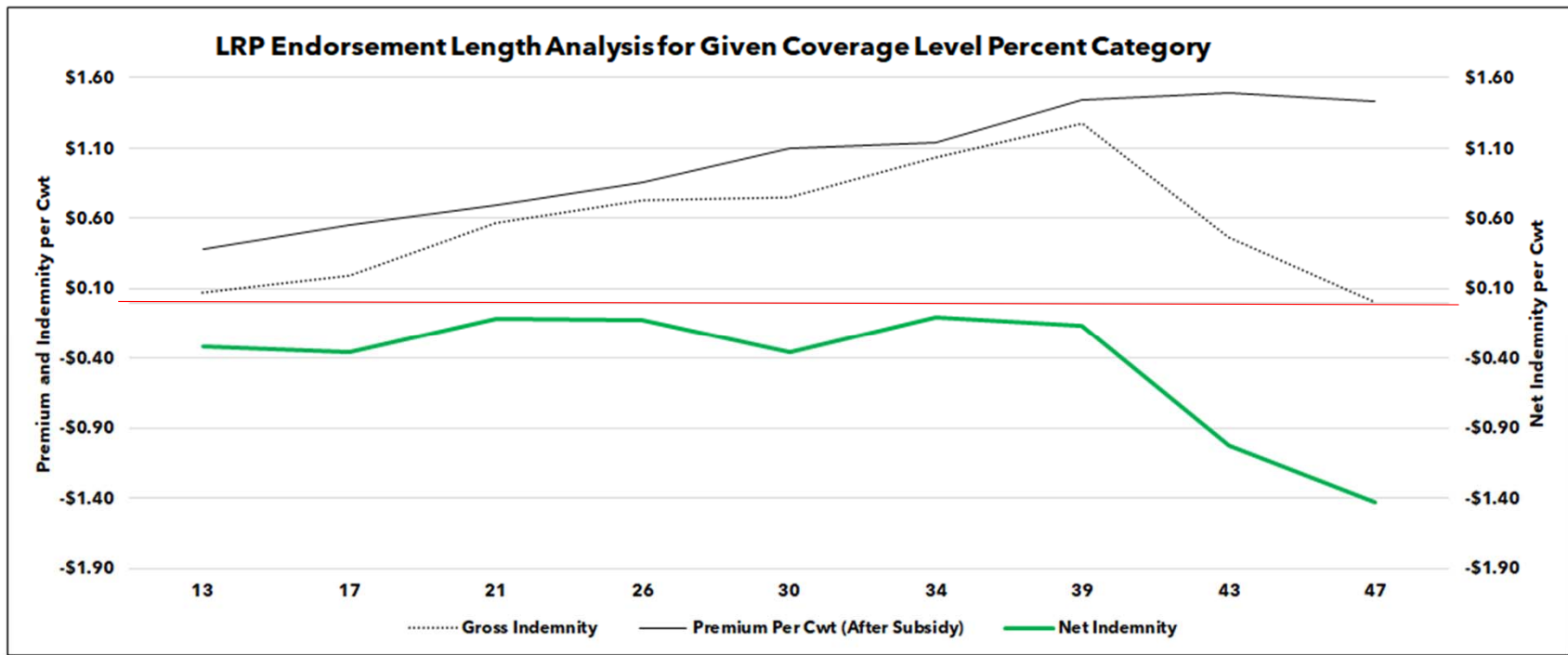
Historically, both premium and indemnities increase with coverage (30 week endorsement)



Historic premium increases with endorsement length, indemnities mixed (95% coverage)



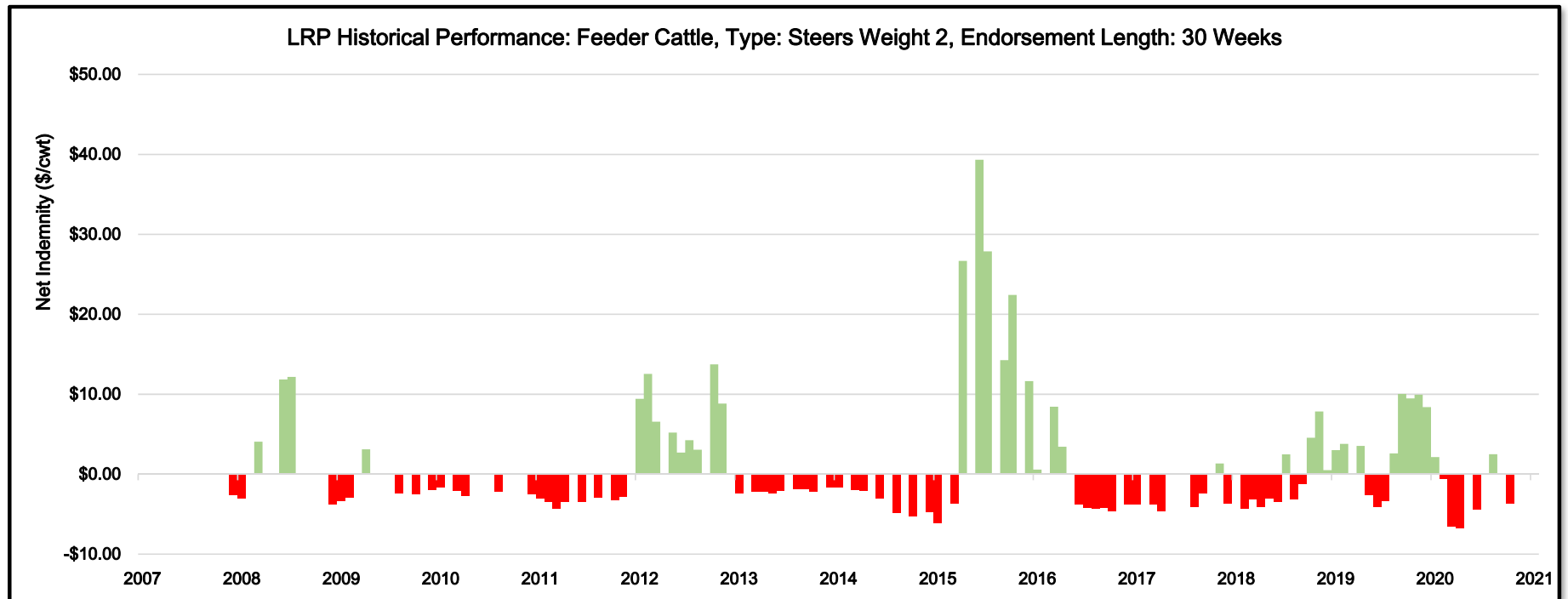
Lower coverage levels cost less, but lower net indemnities (87%)



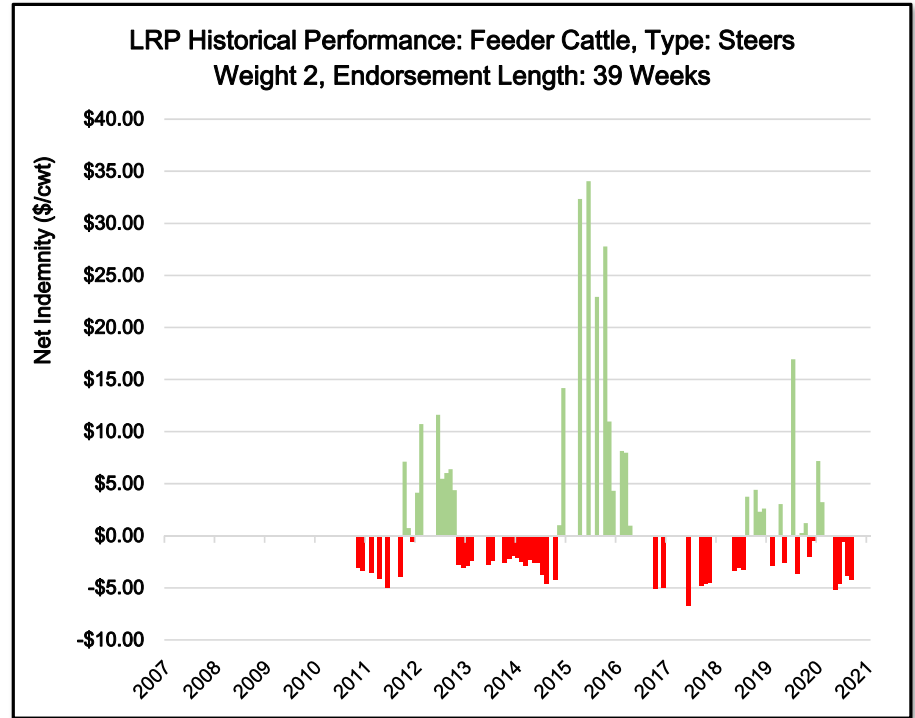
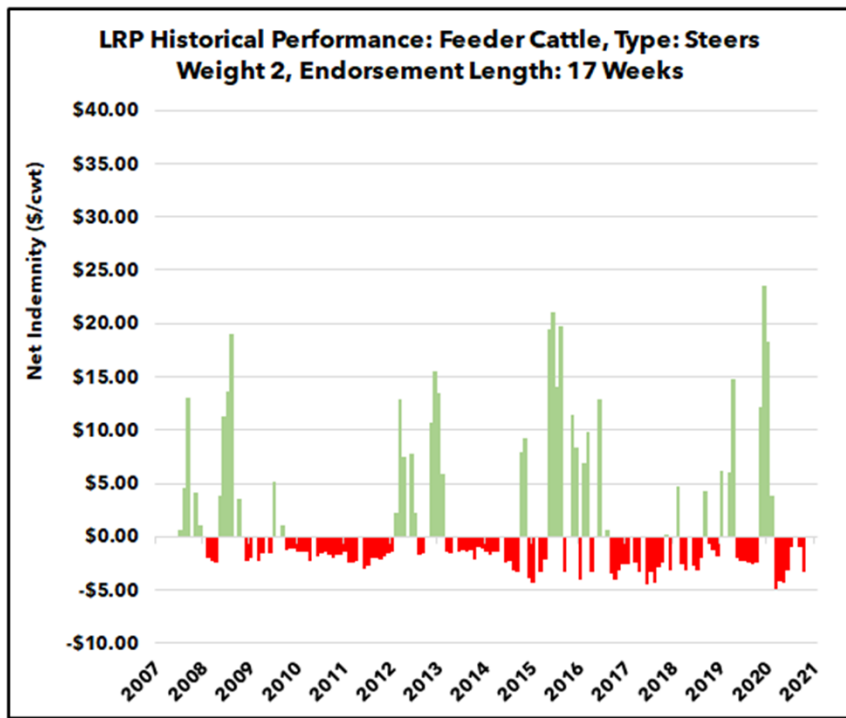
Cost vs risk reduction tradeoffs

| Crop Year | Exp. End Value | Coverage Price | Coverage Level | Rate | Cost Per CWT | Producer Premium Per CWT |
|-----------|----------------|----------------|----------------|----------|--------------|--------------------------|
| 2021 | 154.674 | \$154.670 | 1.000000 | 0.038372 | 5.935 | 3.86 |
| 2021 | 154.674 | \$152.670 | 0.987000 | 0.031630 | 4.829 | 3.14 |
| 2021 | 154.674 | \$150.670 | 0.974100 | 0.025957 | 3.911 | 2.54 |
| 2021 | 154.674 | \$148.670 | 0.961200 | 0.020993 | 3.121 | 2.03 |
| 2021 | 154.674 | \$146.670 | 0.948300 | 0.016881 | 2.476 | 1.49 |
| 2021 | 154.674 | \$144.670 | 0.935300 | 0.013410 | 1.940 | 1.16 |

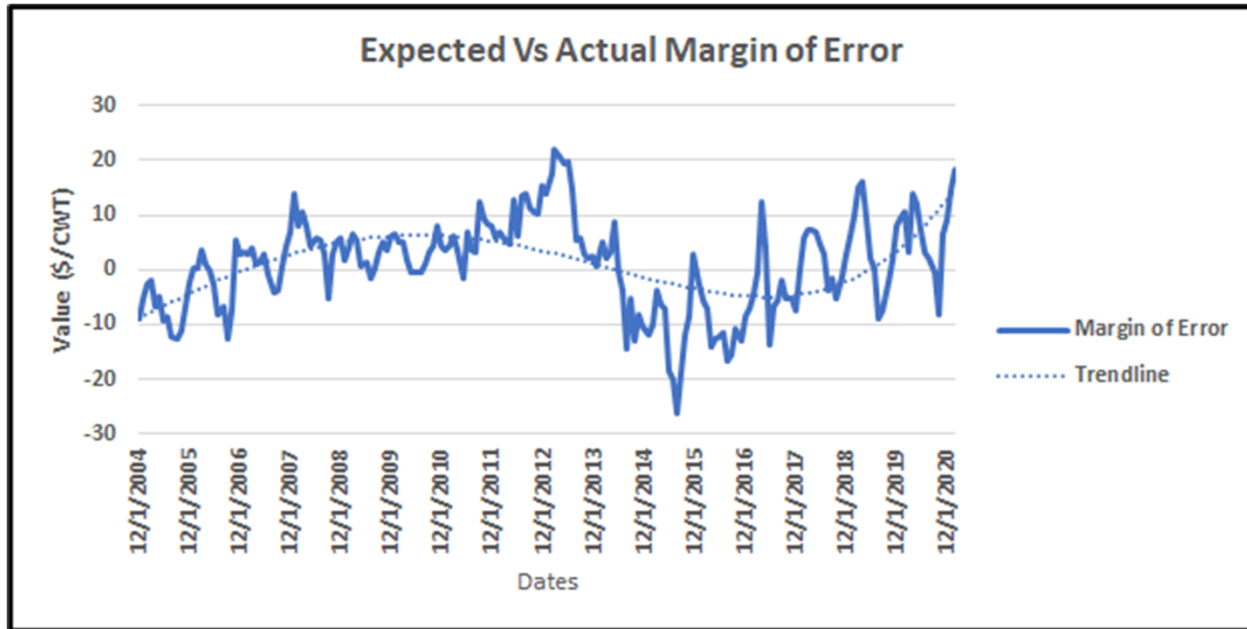
With 95% coverage, over half the time you pay up to \$5/cwt, indemnities concentrated



Similar frequent of payouts with different endorsement lengths



Expected minus actual price increasing in volatility



Greater than zero implies potential for LRP indemnity

LRP: The bottom line

- Policy is now more favorable
- The highest coverage policies provide the highest protection and return over time with frequent indemnities, but costs can easily go to \$5/cwt for feeder
- The lowest coverage policies rarely, if ever, pay indemnities, but cost is negligible – similar to MPCICAT
- “In between” options balance cost and protection
 - Around 89%, about \$1/cwt (varies), rarely pays but sizeable indemnities during bad years
 - Around 95%, about \$1.50/cwt-\$2/cwt (varies), pays out around 4 out 10 years

Conclusion

- Many insurance options for cow-calf producers to manage forage and price risk
- In current environment, may be worth reconsidering these options
- PRF/annual forage and LRP – current focus
- Future research and outreach
 - PRF: comparison to self-insurance
 - LRP expected vs actual analysis
 - LRP Scenario analysis – producer focused

Resources

<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>

Vintage LRP:

<https://agmanager.info/livestock-meat/comparing-lrp-put-option>

<https://agmanager.info/livestock-meat/lrp-basis-understanding-basics>

PRF Resources

- <https://agmanager.info/events/risk-and-profit-conference/2016-risk-and-profit-conference-presentations/pasture-rangeland>
- <https://agmanager.info/events/risk-and-profit-conference/previous-conference-proceedings/2017-risk-and-profit-conference/17>
- <https://agmanager.info/crop-insurance/risk-management-strategies/dual-use-option-annual-forage-rainfall-insurance-and>
- <https://www.rma.usda.gov/en/News-Room/Frequently-Asked-Questions/Pasture-Rangeland-Forage>
- <https://extension.missouri.edu/publications/g457>
- <https://extension.okstate.edu/fact-sheets/evaluation-of-rainfall-index-pasture-rangeland-and-forage-crop-insurance-program-and-guidelines-for-producers.html>

Questions?

Comments?

Thank you!

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*This material is based upon work supported by
USDA/NIFA under Award Number 2018-70027-28586.*



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