Livestock Insurance and LRP

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2020 KSU Crop Insurance Conference

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Introduction

I've been in Manhattan for over 3 months and was most recently part of the faculty in the Charles. H. Dyson School of Applied Economics and Management at Cornell University.

I'm developing a KS-focused research, extension, and teaching program in agricultural policy. I previously led crop insurance extension activities for NY state and have conducted research on crop insurance and credit access, conservation practices, and marketing contracts.

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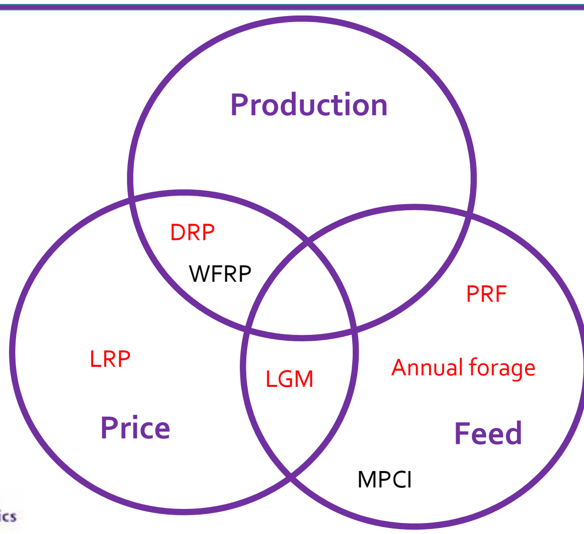
Outline

- Overview of livestock products and local and state participation trends
- LRP overview and recent updates
- LRP example
  - Backgrounded feeder cattle under new provisions

Livestock 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

Context

- KS had $9.7 billion in livestock receipts in 2019 (crops @ $6.7 billion)
  - Cattle & Calves: $8.4 billion
  - Milk: $666 million
  - Hogs: $549 million
  - Chicken eggs: $56 million

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Source: USDA Economic Research Service

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Livestock Gross Margin (LGM)

- Provides protection when gross margin decreases
  - Meat/milk prices drop or feed costs rise
  - Based on futures prices
- Enrollment occurs on the last business day of each month, covers 11 months
- Indemnities paid when total actual gross margins over the covered, 11-month period are less than the gross margin guarantee

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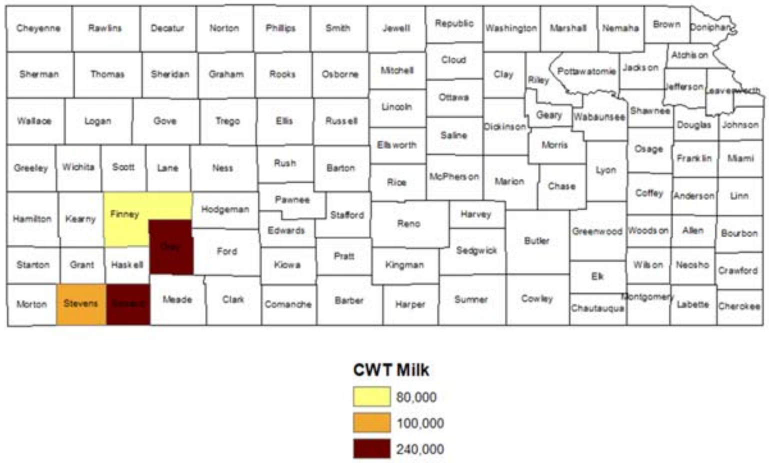
Livestock Gross Margin (LGM) – Dairy 2011



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Dairy Revenue Protection (DRP)

- Available since Oct. 2018.
- Covers expected milk revenue on a quarterly (3-month) basis, up to five quarters (15 months) in the future.
- Expected revenue is based on futures market price and KS state-level* yields
- Two pricing options, both based on futures market prices:
  - Class pricing: combination of Class III and Class IV milk prices.
  - Component pricing: component milk prices for butterfat, protein and other solids used to calculate a price based on the producer's individual butterfat and protein test percentages.

*Some states (Including NE, OK) use pooled/regional/multistate yields

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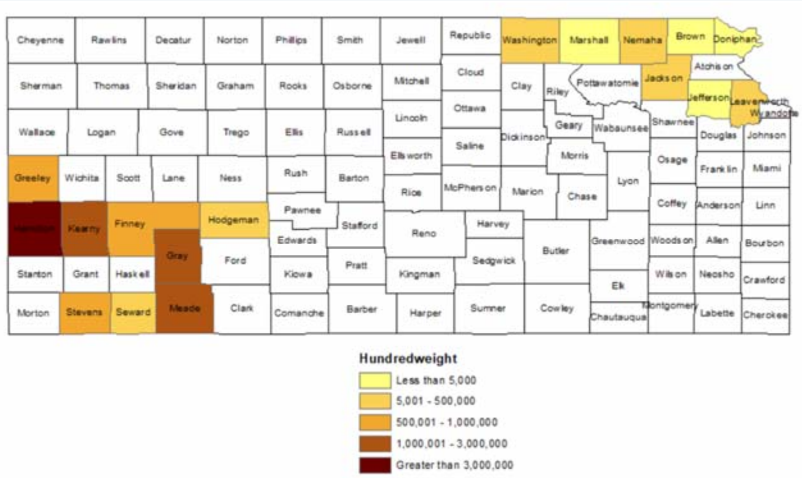
Dairy Revenue Protection (DRP)

- KS DRP 2019
  - 19 policies at 95% coverage
  - 1.4 billion LB, $244 million liabilities
  - $2 million producer premium, $2.8 million indemnities
- KS DRP 2020
  - 26 policies, 95% coverage
  - 2.2 billion LB, $395 million liabilities
  - $3.9 million producer premium, $7.9 million indemnities
- For context: Total milk production in KS in 2019
  - ~3.8 billion LB milk produced
  - ~$666 million in milk sales

KS 2020 CWT milk insured under DRP



MPCI for silage

- Corn or sorghum grown as feed can be insured either as grain or silage
  - Silage-only varieties (i.e. BMR) generally must be covered under yield/APH policies*
- Corn insured as grain and chopped for silage requires an appraisal as grain before harvest and vice versa
  - Silage stored in an "ag-bag" cannot be appraised
- Losses for grain corn (grain yield) may be different than losses for silage corn (tonnage)
- With YP/APH policies, protection against high prices may be limited.

*Exception for mixed silage and grain varieties under revenue policy – this option is complicated, so talk to your agent if interested

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Silage Sorghum trends

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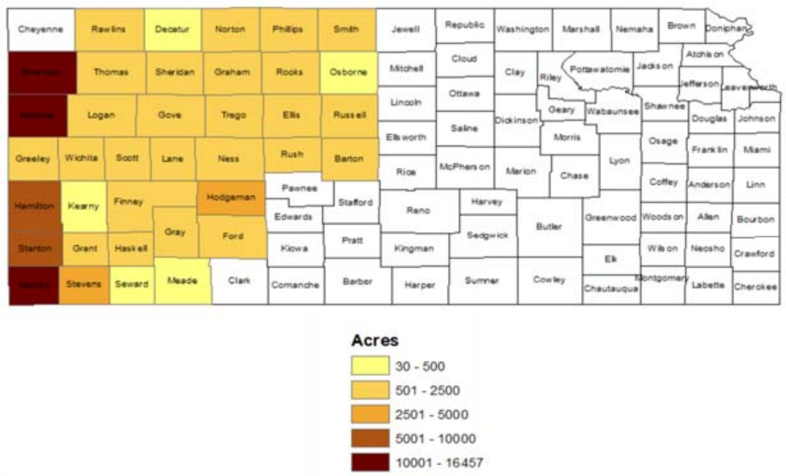
Silage Sorghum enrollment in 2006



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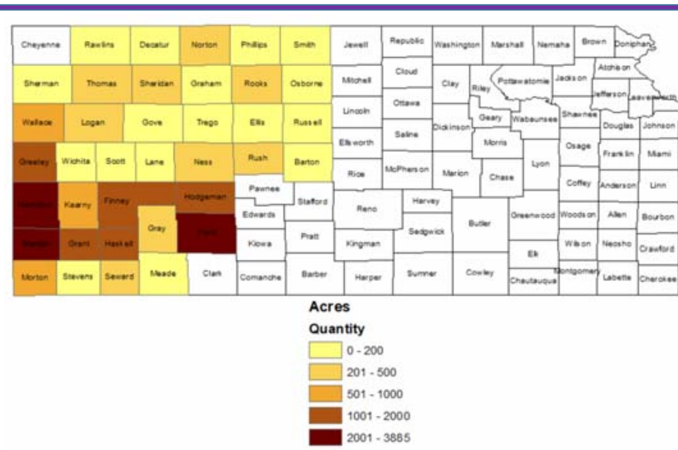
Silage Sorghum enrollment in 2020



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Whole Farm Revenue Protection (WFP)

- WFRP insures the **whole** operation under 1 policy
  - *All* crops or livestock must be covered
  - Can be combined with MPCI
  - Expected revenue for animal (products) capped at **$2 million**
- More diversified farms benefit from **higher premium subsidies** and **lower premium rates**
- Schedule F tax records for farm activities over past 5* years are required
- So far, KS usage is low: 2020 has 8 total policies covering $4.8 million in liabilities (down from 11/$6 million in 2019)

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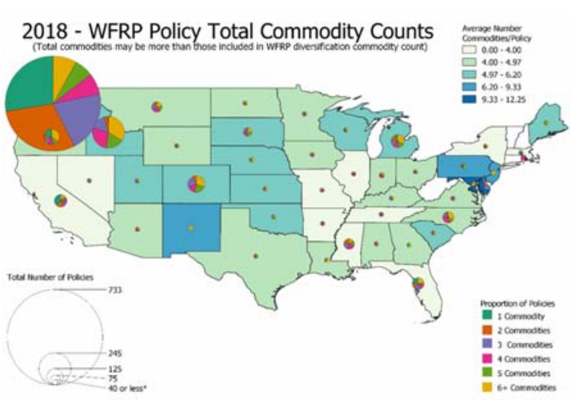
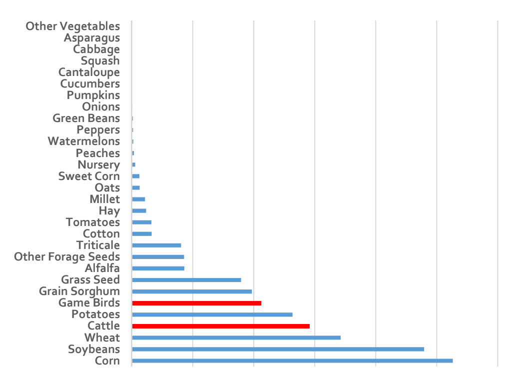
WFRP experience in KS





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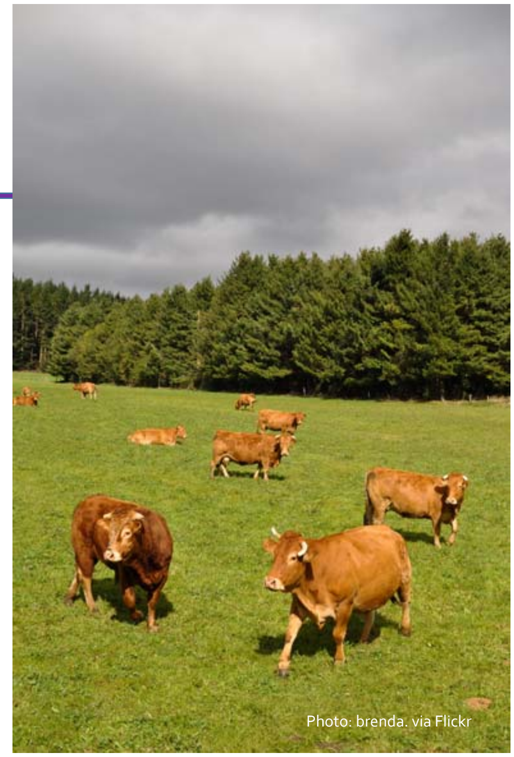
Pasture, Rangeland, and Forage



- PRF insures livestock growers against **lack of precipitation (rain or snow)** relative to historic levels
  - Enables producers to buy feed when forage is limited
- Using a grid system, USDA tracks precipitation in an area, and **sends payments automatically** when levels are below guarantee
  - No record keeping required!
- Important consideration: *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*
- KS in 2020: 1.8 million acres, $95 million liabilities

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Annual Forage

- 2020: 94,177 acres with > $16 million liabilities
- 2019: 48,472 ares with $9.7 million liabilities
- Annually planted acreage, used as feed and forage for livestock
- Indemnities are triggered by a rainfall index
- KS is eligible for "dual use" with small grains
- 2020: sub-state county base values calculating using methodology similar to PRF

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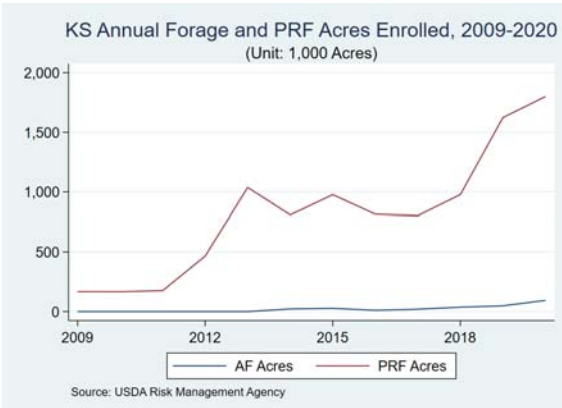
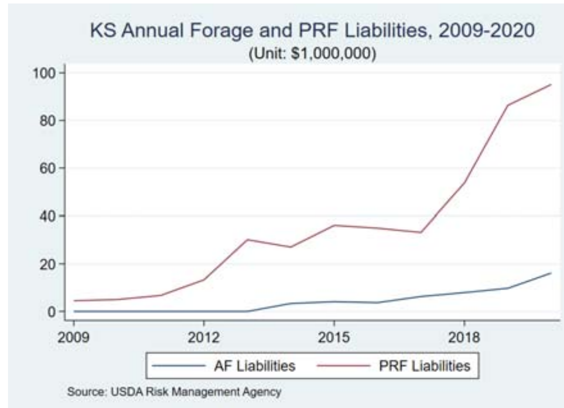
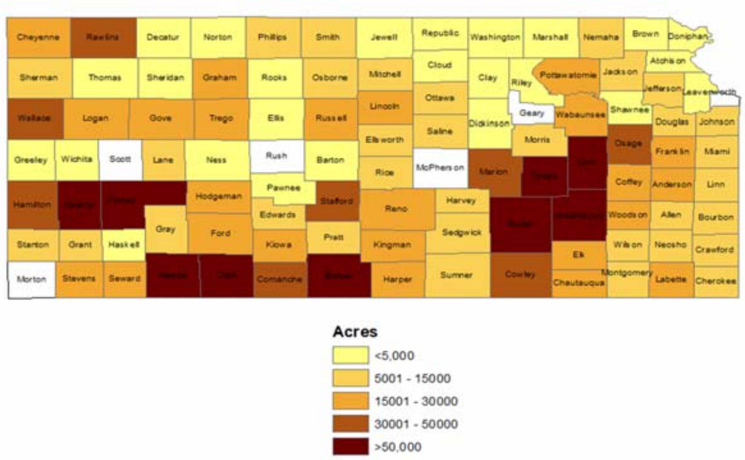
PRF and AF trends

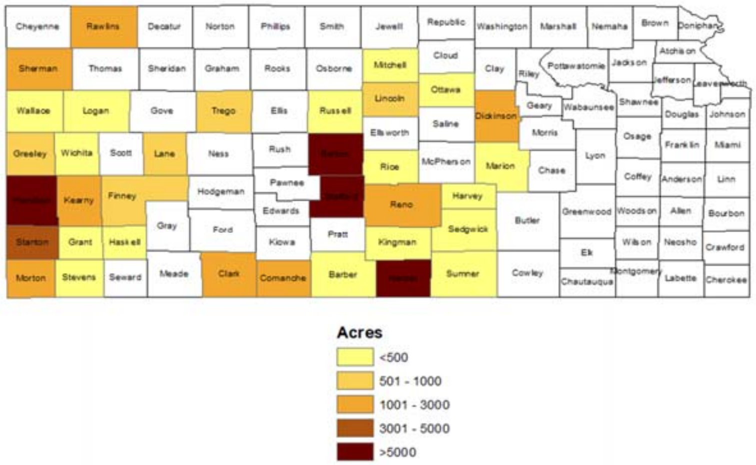




PRF acres enrolled in 2020



Annual Forage acres enrolled in 2020

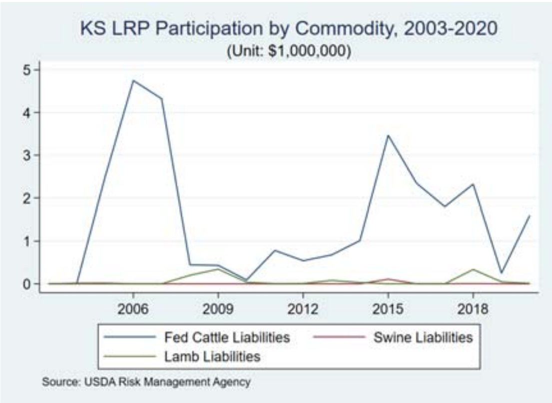


Livestock Risk Protection(LRP)

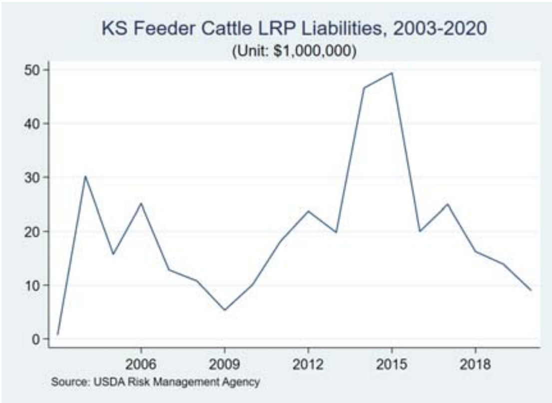
- Protects against declines in market prices
- Prices based CME index for feeder cattle prices and AMS for fed cattle
- First apply for the policy (one time), then select an endorsement
- Premiums depend on expected final market prices of livestock and can change frequently
- Must be purchased in state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

Livestock Risk Protection: state trends

Use of LRP is currently low



Feeder cattle participation highest but variable



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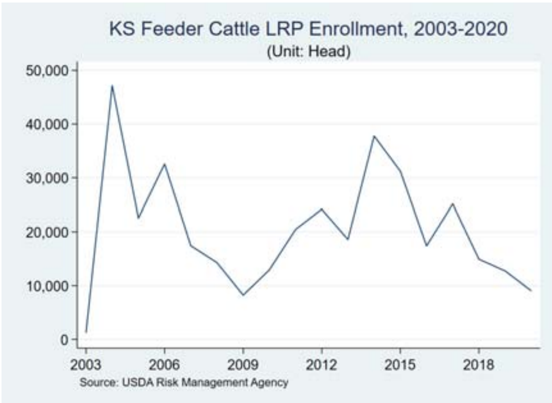
Livestock Risk Protection: State Trends

Use of LRP is currently low

Feeder cattle enrollment peaked in 2004



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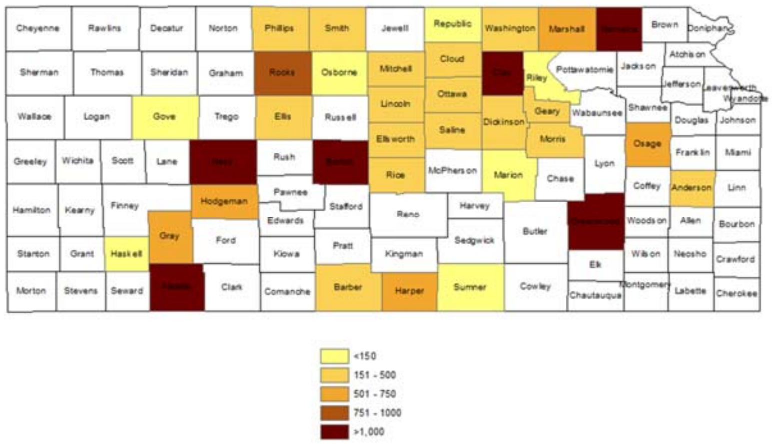
2017 LRP Feeder Cattle – head covered



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

Livestock Risk Protection 2021 CY updates

- 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

Livestock Risk Protection example

- Backgrounding spring-born calves
- 313* head steers
- Using March 12 2021 for target sale date
- Weight 2: 600-900 lbs
- Covered price: $128.88

LRP – March 2021 endorsement

https://public.rma.usda.gov/livestockreports/main.aspx

20 Kansas	998 All Counties	21	0801 Feeder Cattle	810 Steers Weight 2	203 Endorsement Ending in March Yr1	2021	128.876	$128.030	0.993400	0.054229	6.943	03/12/2021	
20 Kansas	998 All Counties	21	0801 Feeder Cattle	810 Steers Weight 2	203 Endorsement Ending in March Yr1	2021	128.876	$126.030	0.977900	0.047227	5.952	03/12/2021	
20 Kansas	998 All Counties	21	0801 Feeder Cattle	810 Steers Weight 2	203 Endorsement Ending in March Yr1	2021	128.876	$124.030	0.962400	0.040748	5.054	03/12/2021	
20 Kansas	998 All Counties	21	0801 Feeder Cattle	810 Steers Weight 2	203 Endorsement Ending in March Yr1	2021	128.876	$122.030	0.946900	0.035032	4.275	03/12/2021	
20 Kansas	998 All Counties	21	0801 Feeder Cattle	810 Steers Weight 2	203 Endorsement Ending in March Yr1	2021	128.876	$120.030	0.931400	0.029876	3.586	03/12/2021	
20 Kansas	998 All Counties	21	0801 Feeder Cattle	810 Steers Weight 2	203 Endorsement Ending in March Yr1	2021	128.876	$118.030	0.915800	0.025510	3.011	03/12/2021	
20 Kansas	998 All Counties	21	0801 Feeder Cattle	810 Steers Weight 2	203 Endorsement Ending in March Yr1	2021	128.876	$116.030	0.900300	0.021555	2.501	03/12/2021	
20 Kansas	998 All Counties	21	0801 Feeder Cattle	810 Steers Weight 2	203 Endorsement Ending in March Yr1	2021	128.876	$114.030	0.884800	0.018004	2.053	03/12/2021	
20 Kansas	998 All Counties	21	0801 Feeder Cattle	810 Steers Weight 2	203 Endorsement Ending in March Yr1	2021	128.876	$112.030	0.869300	0.015085	1.690	03/12/2021	
20 Kansas	998 All Counties	21	0801 Feeder Cattle	810 Steers Weight 2	203 Endorsement Ending in March Yr1	2021	128.876	$110.030	0.853800	0.012360	1.360	03/12/2021	

Other parameters

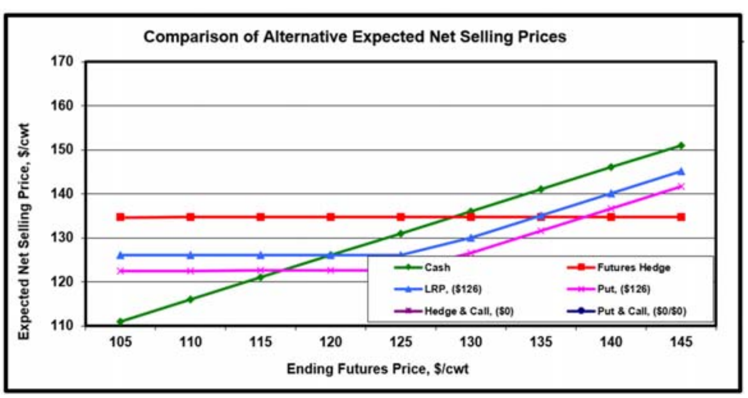
Current date	10/14/2020
Number of head (number of head to match futures contract = 63)	313
Expected weight at time of sale, lbs/head -- (use weight 2 for LRP)	800
Pounds of cattle expected to sell in cash market, lbs	250,400
Expected sale date	3/15/2021
Feeder cattle type	Steers
CME futures contract for hedging (Jan, Mar, Apr, May, Aug, Sep, Oct, Nov)	Mar
Commission for roundtrip (sell and buy) futures trade, $/contract	$55.00
Commission to buy or sell options contract, $/contract	$30.00
Futures price -- Mar CME feeder cattle contract, $/cwt*	$128.850
Expected basis (cash - Mar CME futures), $/cwt#	$6.00
LRP expected ending value for relevant time period^	$128.876
End date for LRP contract	3/15/2021

Other parameters

CME feeder cattle option premiums				LRP coverage levels and premiums		
Strike price $/cwt	Put $/cwt	Call $/cwt		Coverage Level $/cwt	-%-	LRP cost $/cwt
$118.00	$5.3250	$8.1750		$128.030	99.34%	$6.943
$120.00	$6.175	$7.025		$126.030	97.79%	$5.952
$122.00	$7.125	$5.975		$124.030	96.24%	$5.054
$124.00	$8.750	$5.025		$122.030	94.69%	$4.275
$126.00	$9.350	$4.200		$120.030	93.14%	$3.586
$128.00				$118.030	91.58%	$3.011
$130.00				$116.030	90.03%	$2.501
$132.00				$114.030	88.48%	$2.053
$134.00				$112.030	86.93%	$1.690
$136.00				$110.030	85.38%	$1.360
$138.00				$108.030	83.82%	
$140.00				$106.030	82.27%	
$142.00				$104.030	80.72%	

	Futures	LRP	Put
Number of contracts	5	313	5
Strike price(s), $/cwt		$128.03	$126.00
Premium, $/cwt		$6.943	$9.350

98% coverage without premium subsidy

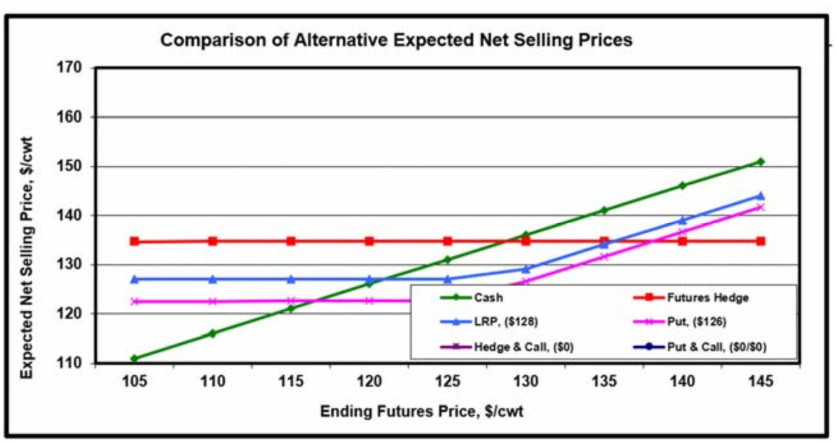


Result with LRP premium subsidy

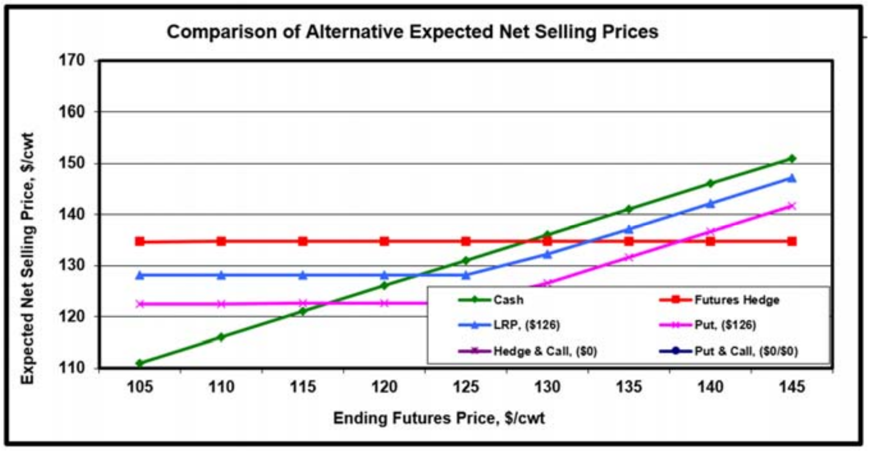
- Previous result: LRP is very similar to a put in the protection that it provides
- Premium subsidy lowers cost
- Estimated per cwt cost based on RMA cost estimator

	99%	98%	96%	95%	93%	92%	90%	88%	87%	85%
Livestock Risk Protection 81	$11,300.00	$9,688.00	$8,226.00	$6,422.00	$5,387.00	$4,523.00	$3,758.00	$2,828.00	$2,328.00	$1,873.00
Per CWT	$4.51	$3.87	$3.29	$2.56	$2.15	$1.81	$1.50	$1.13	$0.93	$0.75

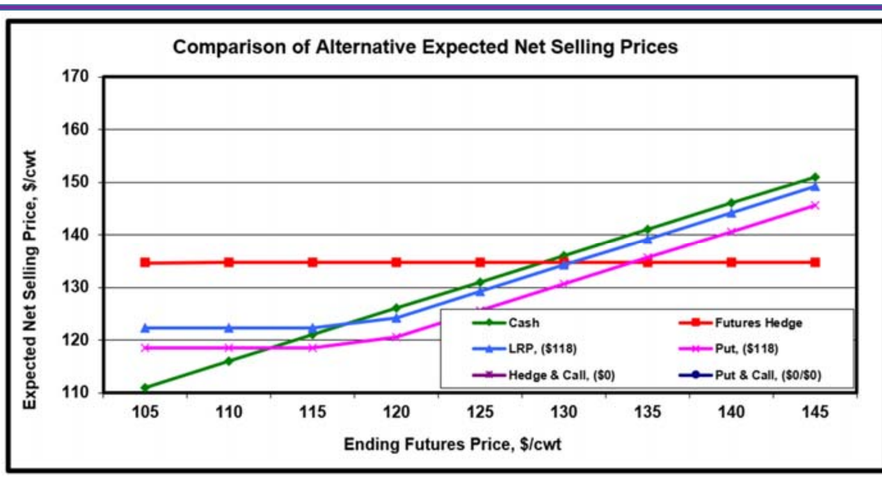
100% coverage with premium subsidy



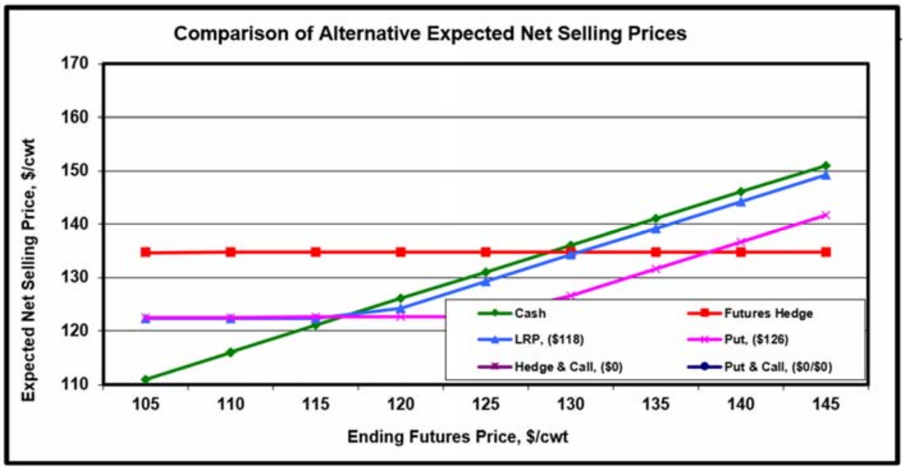
98% coverage with premium subsidy



92% coverage at $118 / cwt



LRP cost advantage: 92% LPR vs $126 put



LRP – Key points

- Similar to a put, at a lower cost
- Lower coverage levels = lower cost and lower price guarantee
- Flexibility: can insure a specific number of pounds within the 6000/12000 head limit
- Seems like a relatively straightforward process for operations that are beginning to think about price risk management
- Livestock products other than DRP (PRF too?) still seem rather “niche”

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Moving forward

Livestock insurance

PRF

LRP

Others?

Other areas

ECO and other high coverage products?

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

Questions?
Comments?
Thank you!

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