Using Margin Protection Insurance to Manage High Input Costs in 2023: Considerations for Kansas Producers

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Current economic conditions

MARKET WILD CARDS KEEP PRICES VOLATILE

By Cassidy Walter
8/4/2022

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https://www.wsj.com/articles/farmers-feel-the-squeeze-of-inflation-11644921180
https://www.agriculture.com/markets/analysis/chs-expects-price-volatility-to-continue

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Farm programs

.....At the hearing, Thompson, who is in line to chair the committee if Republicans win a House majority in the Nov. 8 elections, asked how a **margin protection plan for row crops,** already in use by dairy farmers, would compare to the current crop subsidy programs, which are triggered by low market prices. The dairy margin program issues payments when feed costs are too close to milk prices.

https://www.agriculture.com/news/business/lawmakers-mull-margin-protection-permanent-disaster-program-for-crops

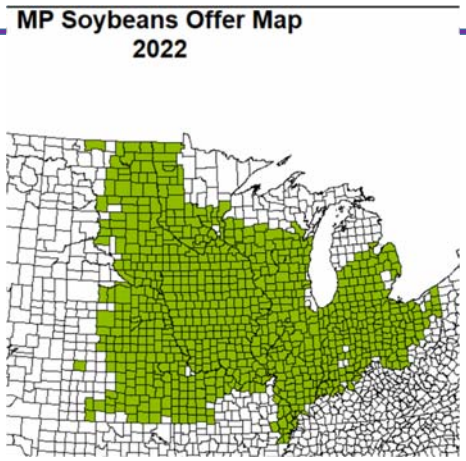
What is margin protection insurance?

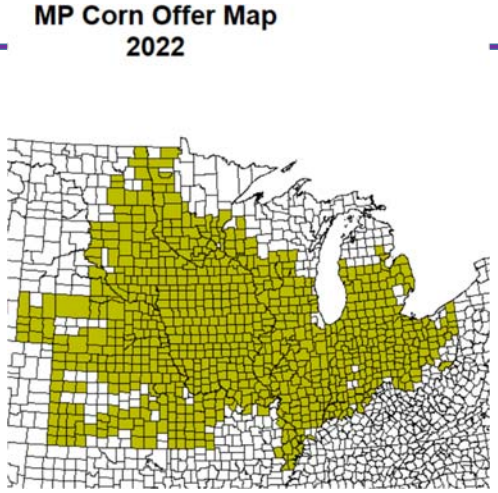
When the operating margin (difference between revenue and *select* costs) *at the county level* for corn or soybeans is lower than expected, you get paid

OR

Similar to ECO (Enhanced Coverage Option) with earlier price discovery AND *some* adjustment for input costs

Where is it available?





https://www.marginprotection.com/

Many questions

- What is it?
- Expected 2023 expected margins
- Sensitivity of margin to yield, price and input changes
- General revenue and expense trends

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Margin Protection Insurance

Not personalized but basic

More personalized but more complicated

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Current use

Acres enrolled

KS 2022

~10,500 acres corn

~2,000 acres soybeans

KS 2018

~13,000 acres corn

~2,500 acres soybeans

Patterns

- Used with RP
- Higher coverage levels prevalent (95%)
- Indemnities paid in 2018-20 for many policies at 90-95% coverage level

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Detailed breakdown of Margin Protection

https://agmanager.info/events/risk-and-profit-conference/previous-conference-proceedings/2017-risk-and-profit-conference/14

https://www.marginprotection.com/

Comparison: triggers

- YP: Triggered by farm yield decline
- RP: Triggered by farm yield and/or national price decline
- MP: Triggered by county yield and/or national price declines and/or national input cost increases

Comparison: triggers based on….

- YP: Farm yield x Feb. '23 futures
- RP: Farm yield x [Higher of (Feb '23 or Oct '23 futures)] (HPO)
- MP*: [County yield x Higher of (Aug/Sept '22 or Oct '23 futures)] – [County yield X national input prices]

Margin calculation

Expected Margin = Expected revenue- expected costs

Expected Revenue: County Expected Yield X projected price

Example: corn = 150 bu/acre X $6.00 / bu = $900

Expected Costs = Inputs subject to price changes + Inputs not subject to price changes

(**Note:** more accurate to say inputs who costs can be observed/measured vs those that cannot for insurance purposes)

"Subject to price change" input costs

2022 Crop Year

Corn Input Amounts (per Acre)	Urea (lbs./acre)	DAP (lbs./acre)	Potash (lbs./acre)	Diesel (gal/acre)	Costs not subject to price change
Corn Irrigated	(ECY*.83)/.46	(ECY*.35)/.46	(ECY*.25)/.6	(ECY*.10) + 2.5	$206.90
Corn Non-Irrigated	(ECY*.83)/.46	(ECY*.35)/.46	(ECY*.25)/.6	(ECY*.04) + 2.5	$206.90

Soybean Input Amounts (per Acre)	Urea (lbs./acre)	DAP (lbs./acre)	Potash (lbs./acre)	Diesel (gal/acre)	Costs not subject to price change
Soybean Irrigated	0	(ECY*.73)/.46	(ECY*1.1)/.6	(ECY*.30) + 2.5	$111.50
Soybean Non-irrigated	0	(ECY*.73)/.46	(ECY*1.1)/.6	(ECY*.10) + 2.5	$111.50

Expected cost estimation

MP Total Cost Calculation		
Costs not subject to price change	=	"Use Costs not subject to price change"
Costs subject to price change	=	(Input Price x Unit per acre)
Preliminary Total Costs	=	Total Costs + Variable Costs
Interest Rate Cost	=	Apply Interest Rate Calculation
MP Total Costs	=	Costs not subject to price change + Costs subject to price change + Interest cost

Nemaha County Example

144 bu/acre expected yield in 2022

	Projected Price	RP Price	Expected margin	Harvest Price	Final Margin
2022	$5.06	$5.90	$384	?	?
2021	$3.82	$4.58	$253	$5.37	$715
2020	$4.03	$3.88	$259	$3.99	$461
2019	$3.95	$4.00	$219	$3.90	$291
2018	$3.97	$3.96	$244	$3.68	-$20.00

Nemaha 2022 example MP premiums

95% coverage: $74/ acre
90% coverage: $63/acre
85% coverage: $47/acre
80% coverage: $35/acre
75% coverage: $29/acre
70% coverage: $21/acre

Premium subsidy ranges from 44-59%

Urea

MONTH	CHART	LAST	CHANGE	PRIOR SETTLE
UFVZ2		-	-	585.00
JAN 2023 UFVF3		-	-	605.00
FEB 2023 UFVG3		-	-	605.00
MAR 2023 UFVH3		-	-	615.00
APR 2023 UFVJ3		-	-	592.50

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https://www.barchart.com/futures/quotes/JC*1
https://www.cmegroup.com/markets/agriculture/fertilizer/urea-granular-fob-us-gulf.html

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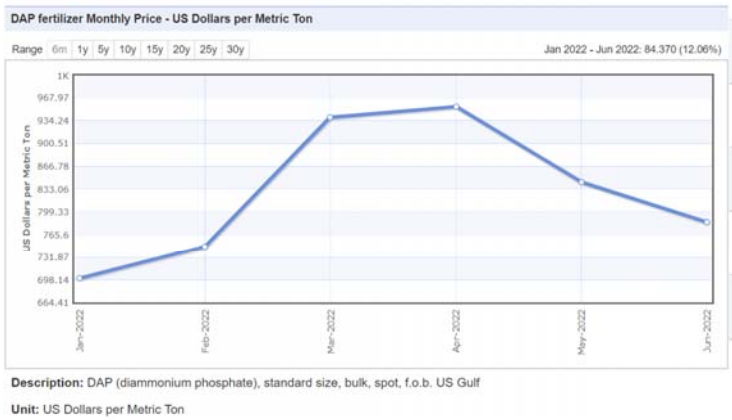
DAP



Description: DAP (diammonium phosphate), standard size, bulk, spot, f.o.b. US Gulf

Unit: US Dollars per Metric Ton

MONTH	CHART	LAST	CHANGE	PRIOR SETTLE
OCT 2022 DFNV2		-	-	725.00
NOV 2022 DFNX2		-	-	725.00
DEC 2022 DFNZ2		-	-	722.50
JAN 2023 DFNF3		-	-	710.00
FEB 2023 DFNG3		-	-	710.00
MAR 2023 DFNH3		-	-	710.00
APR 2023 DFNJ3		-	-	750.00

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https://www.cmegroup.com/markets/agriculture/fertilizer/dap-fob-nola.html
https://www.indexmundi.com/commodities/?commodity=dap-fertilizer

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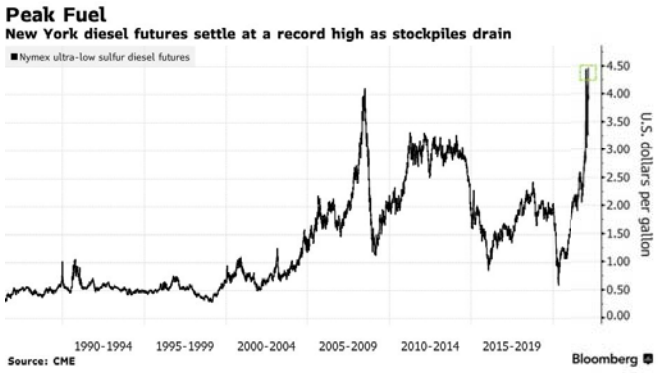
Diesel



https://www.bloomberg.com/news/articles/2022-04-26/u-s-diesel-futures-settle-at-record-high-as-shortage-deepens

NY HARBOR ULSD FUTURES - QUOTES

MONTH	OPTIONS	CHART	LAST
DEC 2022 HOZ2	OPT		3.3469
JAN 2023 HOF3	OPT		3.3058
FEB 2023 HOG3	OPT		3.2491
MAR 2023 HOH3	OPT		3.1807
APR 2023 HOJ3	OPT		3.1150

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https://www.cmegroup.com/markets/energy/refined-products/heating-oil.quotes.html
https://www.bloomberg.com/news/articles/2022-04-26/u-s-diesel-futures-settle-at-record-high-as-shortage-deepens

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Interest rates

Market expects a small increase in federal funds rate over the next year

MONTH	OPEN	HIGH	LOW	LAST
AUG 22	97.6675	97.6700	97.6650	97.6700
SEP 22	97.4800	97.4850	97.4700	97.4750
OCT 22	97.0750	97.0800	97.0550	97.0600
NOV 22	96.7050	96.7250	96.6900	96.7000
DEC 22	96.5750	96.6000	96.5550	96.5700
JAN 23	96.4900	96.5150	96.4600	96.4800
FEB 23	96.4100	96.4400	96.3750	96.3900
MAR 23	96.4150	96.4300B	96.3600	96.3750
APR 23	96.3700	96.4150	96.3350	96.3400
MAY 23	96.3800	96.4350	96.3450	96.3500
JUN 23	96.4350	96.4750	96.3800	96.3850

https://www.cmegroup.com/markets/interest-rates/stirs/30-day-federal-fund.settlements.html

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MP triggers - example

Expected Revenue = 150 bu * $6 corn = $900

Expected costs: $400 subject to price changes, $250 not subject to price changes ($650 total, ignore interest costs for now for clarity)

95% MP (using as a high coverage policy)

Deductible = $900 * (1-0.95) = 45

Trigger margin = ($900-$650) – 45 = $205

MP Trigger: 20% input price increase

Input prices increase 20%, from $400 to $480. Everything else stays the same.

Harvest margin = $900 – ($250+480) = $170

Trigger margin is $205, you may receive an indemnity of **$35** per acre

MP Trigger: 50% input price increase

Input prices increase 50%, from $400 to $600. Everything else stays the same.

Harvest margin = $900 – ($250+600) = $50

Trigger margin is $205, you may receive an indemnity of **$155** per acre

MP Trigger: 20% yield decline

At harvest, only change is a 20% yield decrease: Yield is 120 bushels per acre. Harvest revenue is 120 bu * $6/bu = $720

Harvest margin = $720 - $650 = $70

Trigger margin is $205, which is greater than the harvest margin, so you may receive indemnity of approximately **$135** per acre

MP Trigger: 20% price decrease

At harvest, only change is a 20% price decrease: Corn goes from $6 /bu to $4.80. Harvest revenue is 150 bu * $4.80 = $720

Harvest margin = $720 - $650 = $70

Trigger margin is $205, which is greater than the harvest margin, so you may receive indemnity of approximately **$135** per acre

Interest costs example

Suppose harvest costs (excluding interest) are the same as expected, $300 per acre. (This number is for clarity, different from previous example)

Expected interest 9% (3% FF + 6%). Interest costs are $14.50 per acre (300 * 0.09 * (6/12))

Harvest interest doubles from current 3%FF to 6%FF, now for harvest margin interest is 12% (6%FF +6%). Interest costs are $18 (300 * 0.12 * (6/12))

Change from expected interest rate is less than $4.00 per acre

Doubling of interest rate (FF) will only have a small impact on potential indemnities

MP triggers & input costs – what matters?

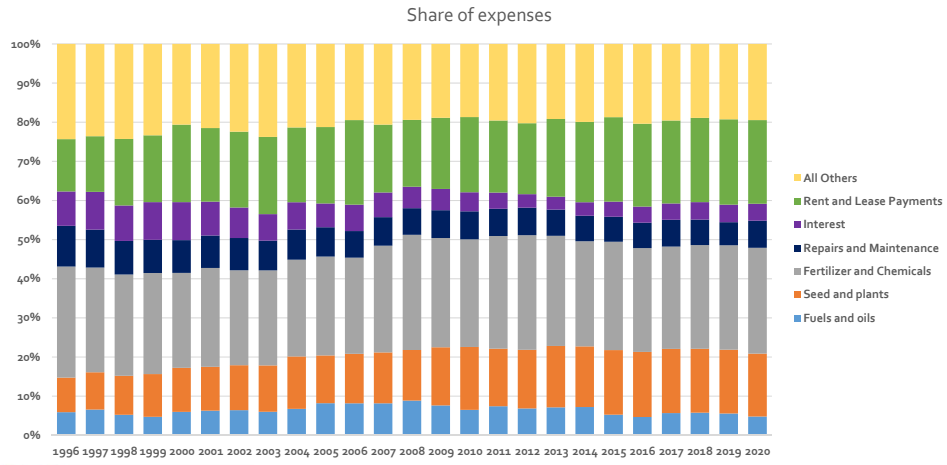
- Takes a **historic** input cost increase to trigger a sizable indemnity
  - What else would happen if input costs go up this much?
- Protects against changes in the inputs for some input costs, not exercise of market power
- In most years, payouts will be driven by price and yield declines

- Higher coverage policies
  1. Pay a lot
  2. Get paid a lot, but not necessarily often
  3. Long term perspective

Other details

- Harvest margin may be negative, liability (max payout) for an MP policy is similar to RP liability
- Premiums, expected margin won't be available until around Sept. 15 2022
- Premiums due at same time as RP, but payouts for 2023 crop year made in summer of 2024 (area product)
- Protection factor can scale up or down premium & indemnities

Corn farm costs



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Source: USDA-ARMS (Agricultural Resource Management Survey)

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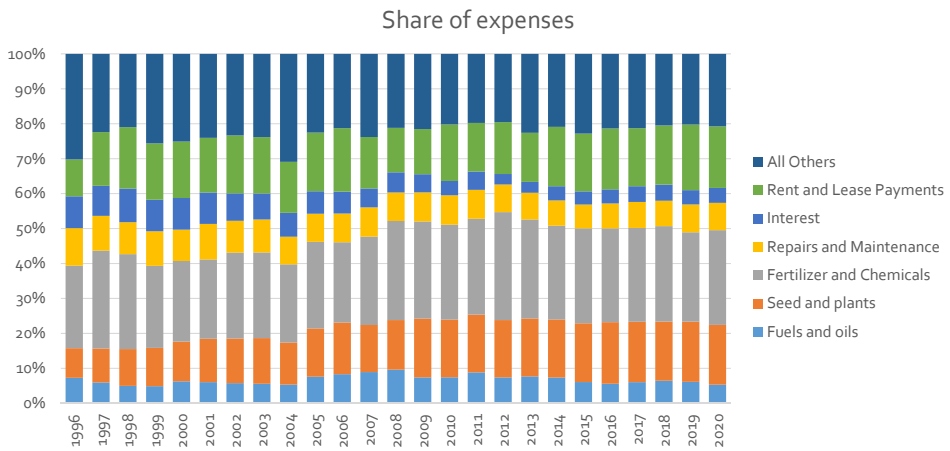
Soybean farm costs



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Source: USDA-ARMS (Agricultural Resource Management Survey)

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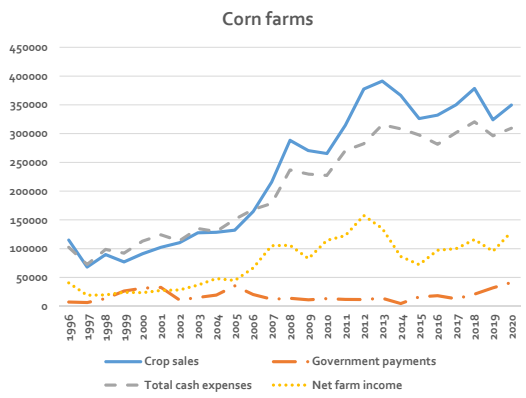
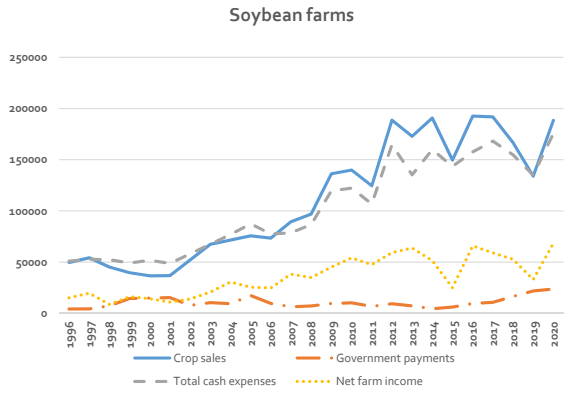
Farm income components





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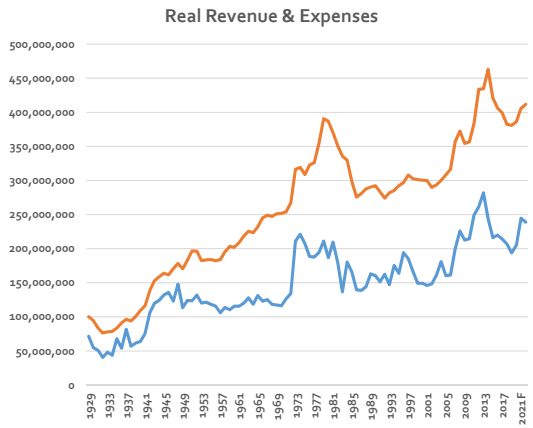
Historic trends



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Source: Farm Income and Wealth Statistics- USDA ERS

The dark red bars indicate the years for which the %Δ Expenses is larger than the %Δ in Revenue.

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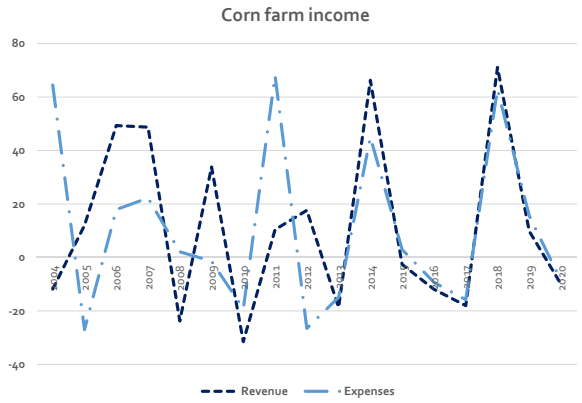
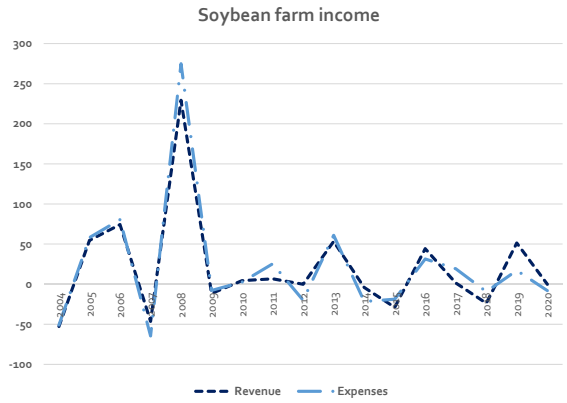
Kansas revenue and expense trends





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Margin – farm policy questions

- How to measure a margin: fixed or based on historic margins?
- How to measure farm costs in a timely fashion?
  - Actual unit costs or raw materials?
  - Survey based?
  - Index based?
- How would a margin payouts compare to price or revenue measures (ARC/PLC) over time?
  - Relationship with farm income / risk reduction
- Would a margin program be stable? More stable than ARC/PLC?

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Concluding thoughts

- For producers who are comfortable with higher coverage policies
  - Early price discovery ($6.00 corn?)
  - Complement to ongoing cost-management
  - Current softening of input-futures may benefit expected margin
  - Exposure to diesel or fertilizer (component) price risk
  - County yields
- Inflation is a major challenge for profitability
  - Low crop prices and yields will typically drive insurance losses
  - Farm policy: margins are a moving target, many questions remain

Moving forward

For producers: price discovery is just getting started, but now is the time to reach out to an agent if you are at all interested in MP

Research: continued analysis of the relationship between crop prices, input prices and farm profit margins

Resources

Ag Manager

https://agmanager.info/events/risk-and-profit-conference/previous-conference-proceedings/2017-risk-and-profit-conference/14

https://agmanager.info/news/margin-protection-insurance

https://agmanager.info/crop-insurance/crop-insurance-papers-and-information/margin-protection-crop-insurance-coverage-comes

https://agmanager.info/crop-insurance/crop-insurance-papers-and-information/margin-protection-crop-insurance-premiums-and

I States

https://farmdocdaily.illinois.edu/2017/09/combining-margin-and-revenue-protection.html

https://blogs.extension.iastate.edu/agdm/2022/08/11/margin-protection-crop-insurance-faq/

Other

https://www.rma.usda.gov/en/Policy-and-Procedure/Insurance-Plans/Margin-Protection-for-Corn-Rice-Soybeans-and-Wheat

https://www.marginprotection.com/

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Questions?
Comments?
Thank you!

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