Pasture, Rangeland, and Forage Insurance: Benefits and Strategies for Iowa's Farmers

James Keeler

University of California, Davis

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Extension Experience

- Bachelors and Masters - University of Nebraska-Lincoln
  - Student Programmer w/ Institute of Agriculture & Natural Resources
  - Developed web applications (Ag Site Planner, Wheat Mite Time Machine), data visualizations of extension research, FFA judging database
- PhD - UC Davis
  - Grapevine Red Blotch Disease Management Costs
  - Costs of pesticide regulation
  - PRF insurance, Livestock predation (gray wolves)
- Interests
  - Risk management, Agricultural technology, Livestock marketing

Objective

- What is Pasture, Rangeland, and Forage Insurance (PRF)?
  - Decisions
  - Pricing and Indemnities
  - Pros and Cons
- How are Iowans using PRF insurance?
  - Considerable diversity of approaches in Iowa.
- What are some effective strategies to maximize the benefits of PRF?

Pasture, Rangeland, and Forage Insurance

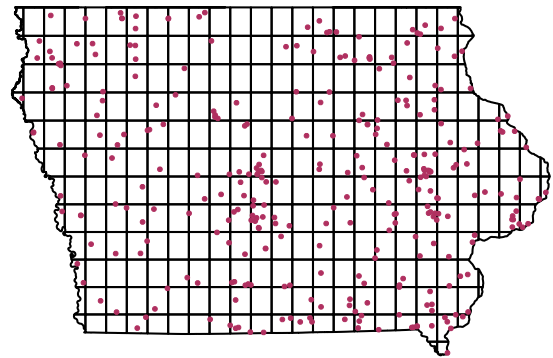
- Rainfall-index based insurance product offered by the USDA RMA
  - Available in Iowa since 2016
- Covers increased costs to supplement reduced forage in drier than usual conditions
- Buy-up coverage, best to combine with other products
  - Catastrophic coverage: Livestock Forage Disaster (LFP), Noninsured Disaster Assistance Program (NAP)
  - Other perils: Livestock Risk Protection (LRP), Livestock Gross Margin (LGM)
- Premiums are subsidized 51-59%

Rainfall Index

- Daily precipitation from NOAA (1948 - present) averaged over a grid
  - ▷ weighted across nearest 4 stations
- Index uses total precipitation for 11 bimonthly intervals
  (Jan-Feb, Feb-Mar,..., Nov-Dec)
- For a given year, grid, and bimonthly interval, rainfall index is

$$\frac{\text{Total Precip}}{\text{Mean Precip (1948 to present - 2 years)}}$$

Grids and Weather Stations



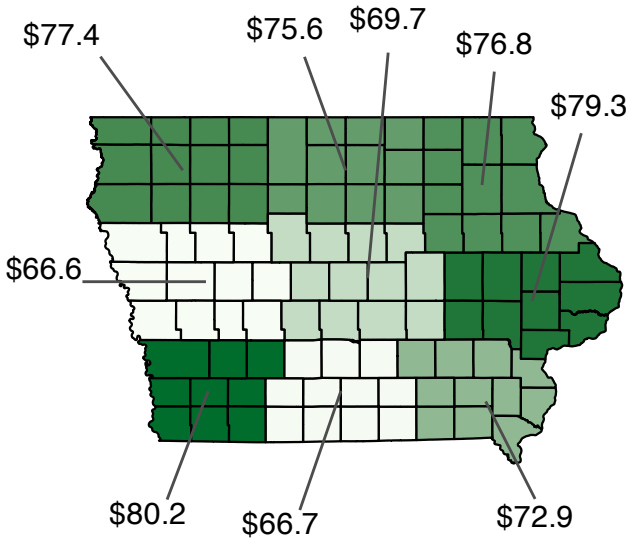
*each grid is ≈ 17 by 12 miles

PRF: Insured Value

- Insured Value is the maximum possible payout that the farmer could receive from their PRF contract.
- Determined by your acreage, intended use, county base value, and coverage level. Not required to insure all acreage.
- Intended use can be hay or grazing
  - Haying uses separated by irrigation practice, organic, transitional.
- County base value
  - average “price of alternative feeding” per acre for a county
  - Determined by FCIC, revised every 3 to 5 years
  - Can adjust using productivity factor if your pasture is more or less productive than the county average

2026 County Base Values - Grazing

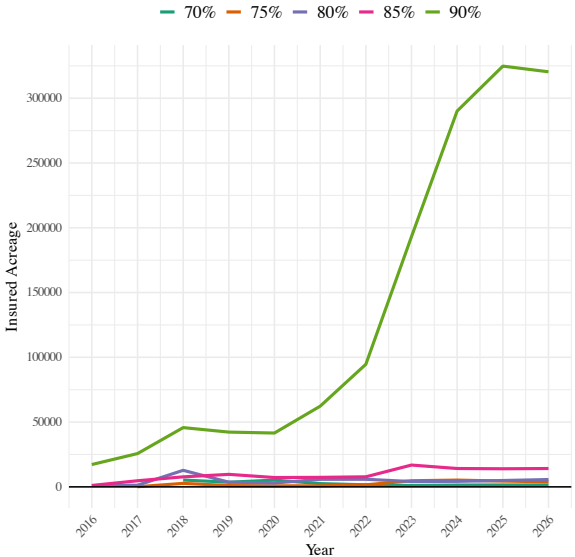
- County base values range from $66.6 to $80.2 per acre for grazing



PRF: Coverage Level

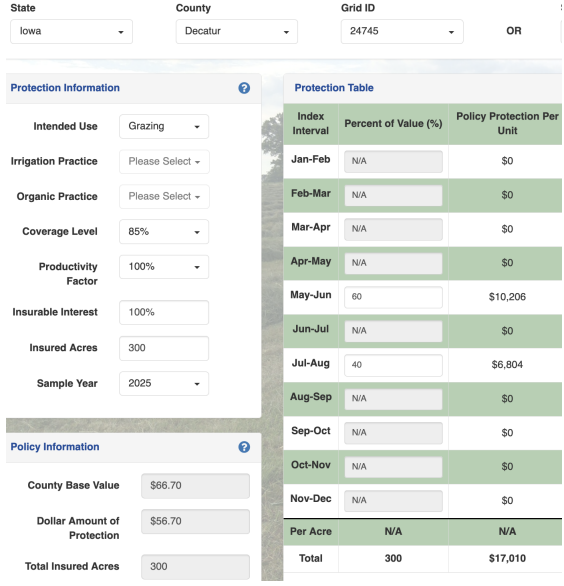
- 70%, 75%, 80%, 85%, 90%
- “Trigger” point for how low the rainfall index must be before an indemnity is paid
- For a 90% coverage level with \$10,000 insured, if the rainfall index is 85% then you would receive an indemnity payment of

$$(0.90 - 0.85) \times \$10,000 = \$500$$



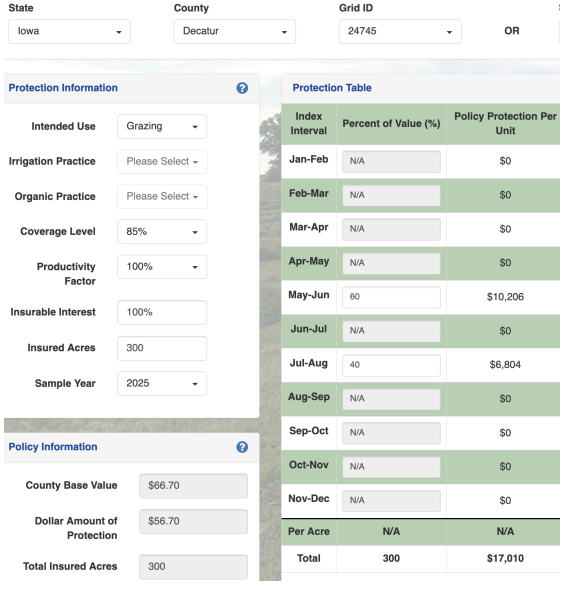
PRF: Interval Selection

- You choose a set of intervals and assign each a percent of value (%)
  - 60% May-Jun + 40% July-Aug
  - % of value is how much of your insured value should depend on that bimonthly interval.
- Maximum % of value is 60%, minimum is 10%, must total 100%
- Cannot overlap months
- USDA PRF Rainfall Support Tool → https://public-rma.fpac.usda.gov/apps/PRF



PRF: Grid Selection

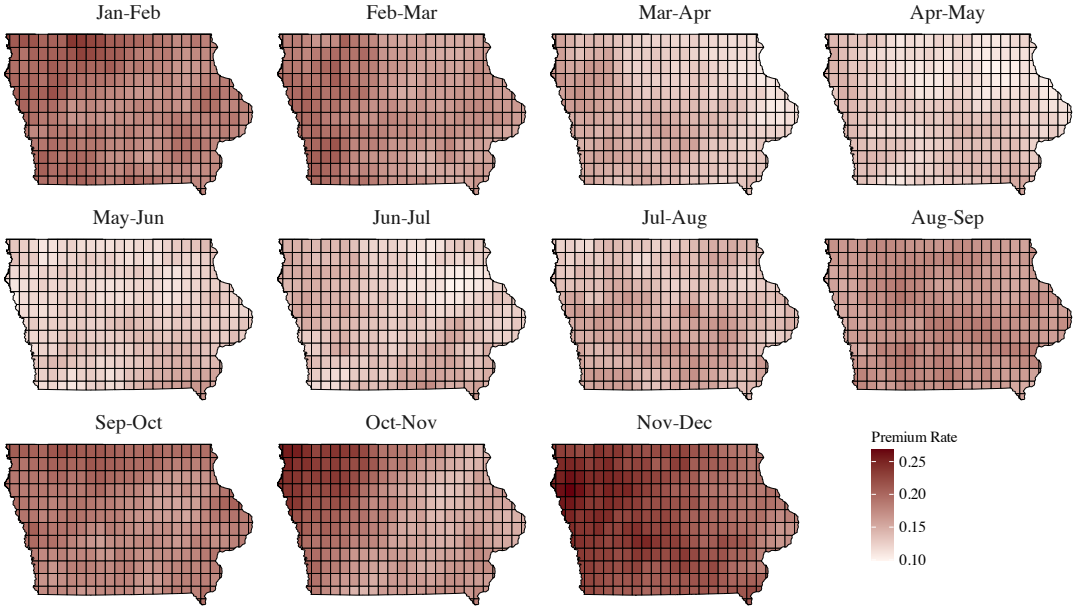
- If your acreage covers multiple grids you have two options:
  - Consolidate under one grid
  - Separate acreages, separate policies
- Grid selection in these instances can be used to hedge risk, pick a lower premium rate, etc.
- Must have insured interest in forage outcome



PRF: Premiums

- Premiums depend on “where”, “when”, and “how much” you insure.
- USDA RMA sets premium rates every year for each grid, bimonthly interval, intended use, and coverage level
  - They use actuarially fair rates (premium $\approx$ average indemnity)
  - But add approximately 14% for “catastrophic loading”
- Roughly based on how risky it is to insure.
  - If rainfall is more variable year to year in grid and/or bimonthly interval then its premium rate will be higher.
  - Higher coverage levels have higher premium rates because the trigger point is higher.

2026 Premium Rates - Grazing



PRF: Pros and Cons

- Pros
  - **Extremely flexible.** You can configure a contract to fit your operation and goals to a considerable degree
  - **Quicker indemnity payments.** You'll receive any indemnities approx. 2 - 3 months after the insured interval.
  - **No upfront costs.** Indemnities are first credited to total premium. If you need to pay, deadline isn't until Sep. 1 of the subsequent crop year.
  - **Subsidized.** On average, from 2016 to 2025 contracts in Iowa returned:

$1.56 in indemnity per $1 paid in premium.*

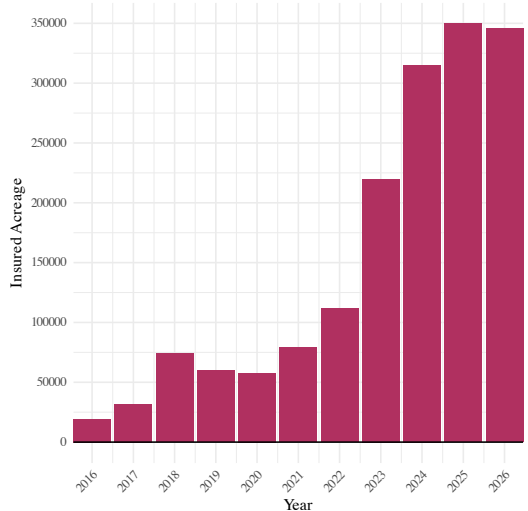
***Not indicative of future performance. Always consult with a USDA-authorized insurance agent.**

PRF: Pros and Cons

- Cons
  - **Basis Risk.** The rainfall index can poorly correlate with forage outcomes.
    - Rainfall index may fail to trigger an indemnity in some bad forage years.
    - Falsely assumes a linear relationship.
  - **Complexity.** Many possible combinations of intervals. Optimizing choices can be challenging and time consuming.
  - **Single Peril.** Only protects from a lack of rainfall, not other drought or flood conditions.

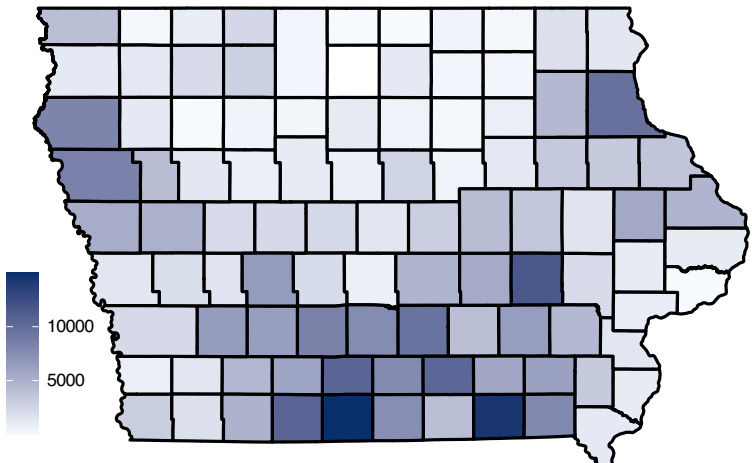
How is PRF being used in Iowa?

- Insured Acreage by Year (USDA Summary of Business)



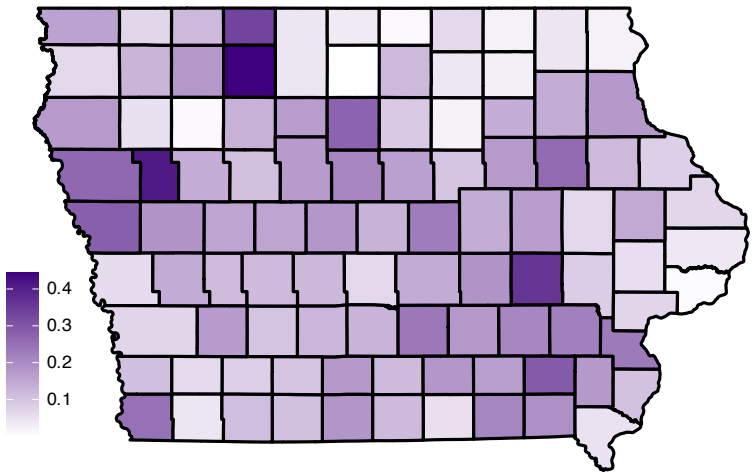
How is PRF being used in Iowa?

- Insured Acreage by County - 2025 (USDA Summary of Business)



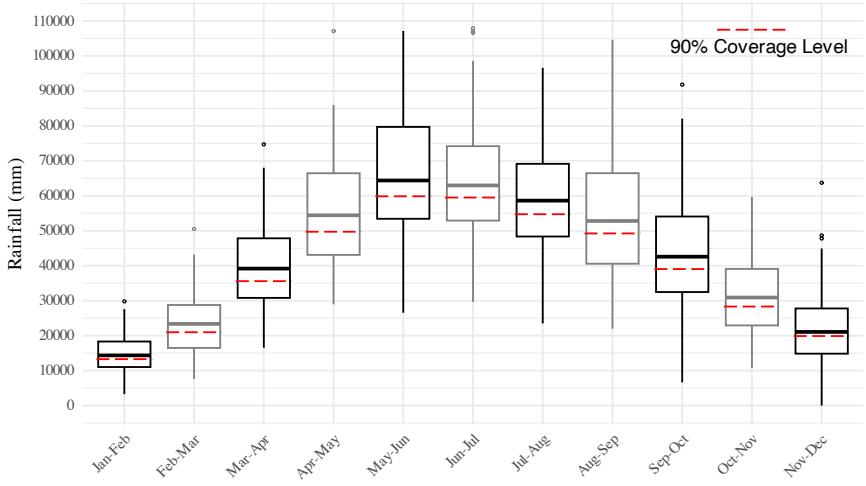
How is PRF being used in Iowa?

- Share of Eligible Acres Insured by County (2022 Ag Census)



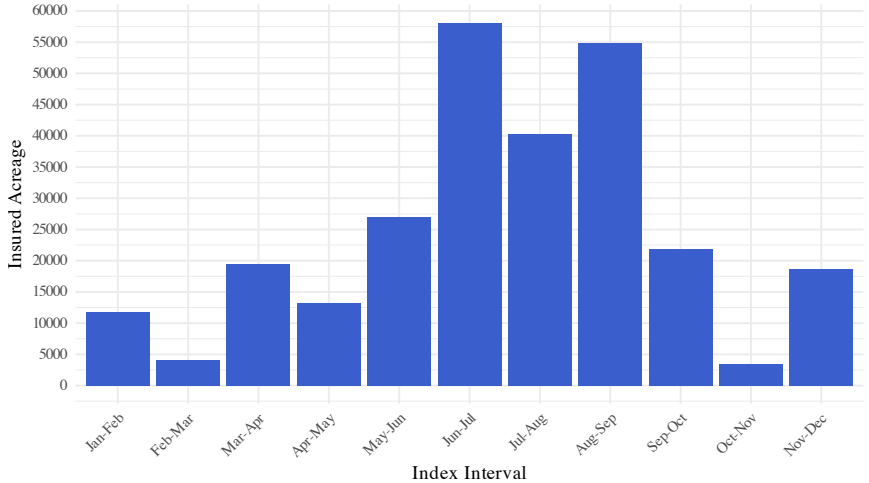
How is PRF being used in Iowa?

- Total Rainfall Distribution Across Index Intervals - **ALL Iowa**



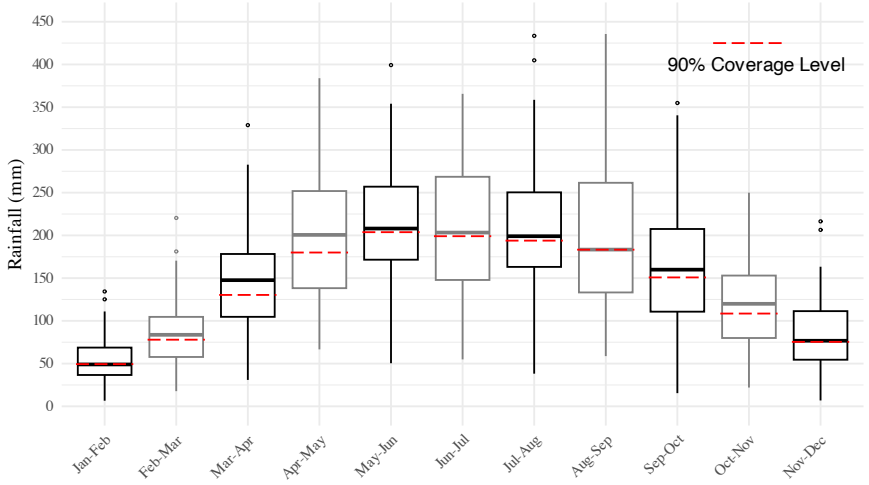
How is PRF being used in Iowa?

- Insured Acreage by Index Interval - **ALL Iowa**



How is PRF being used in Iowa?

- Rainfall Distribution Across Intervals - **Decatur County** grid 24745



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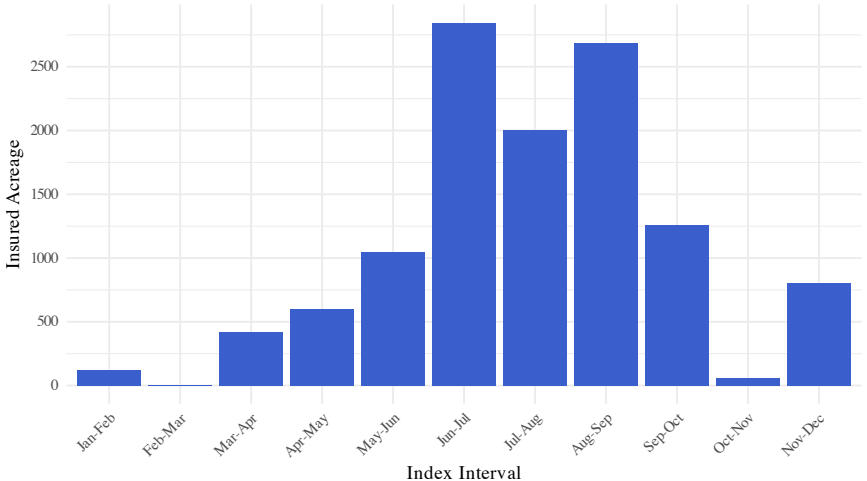
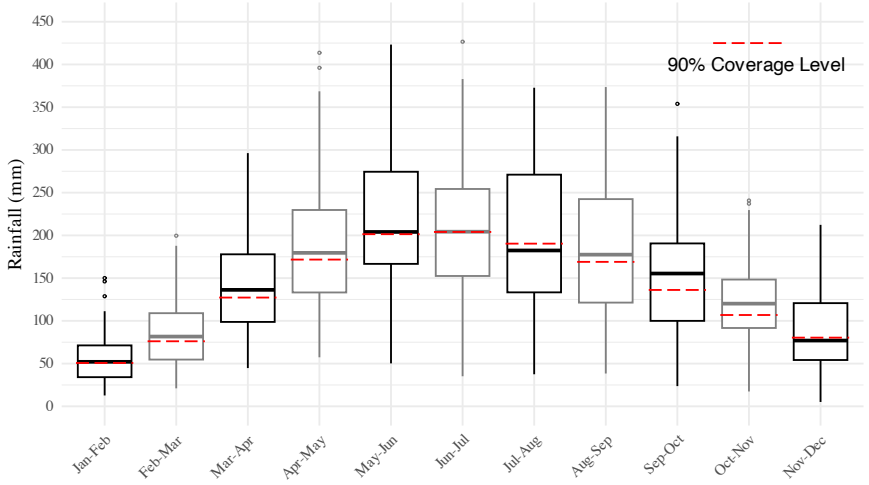


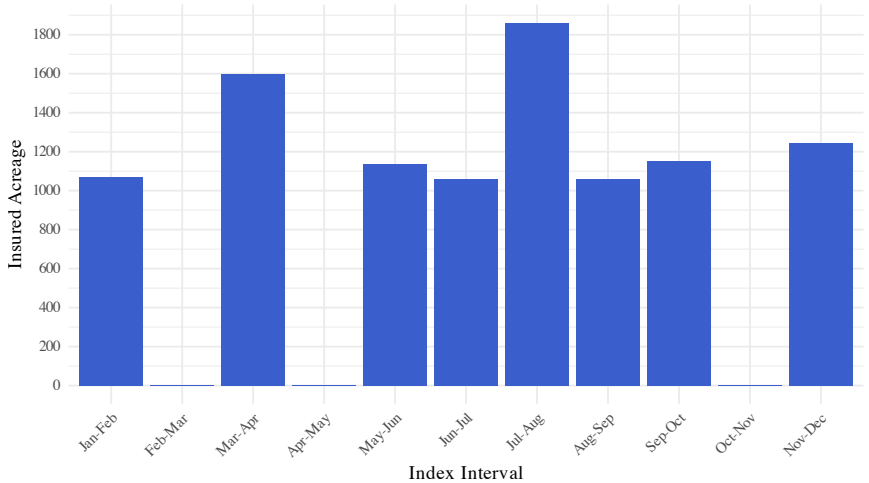
How is PRF being used in Iowa?

- Rainfall Distribution Across Intervals - **Iowa County** grid 25952



How is PRF being used in Iowa?

- Insured Acreage by Index Interval - **Iowa County**



PRF Interval Selection Strategies

- Tradeoff between risk exposure and returns.
- **Risk management.** Select intervals with indexes that correlate well with forage outcomes.
- **Profit maximization.** Select intervals that generate the highest return, even if it means selecting intervals that don't correlate with forage outcomes.

Simulation

- Simulate insurance outcomes for a large set of interval combinations
  - % of value in increments of 5%
  - $\approx$ 10,000 contracts
- Gain Ratio $= \frac{\text{Avg. Indemnity}}{\text{Premium (subsidized)}}$
- Compare with how frequently the contract paid out in years with avg. pasture condition $\geq$ 20% poor or very poor
  - USDA NASS 1995-2025, entire state

County	Decatur
Grid	24745
Variable	Value
Stocking Rate	3
Cow/Calf Pairs	200
Acres	600
Productivity Factor	1
Coverage Level	90%

Risk Management Strategy

Top 5 Contracts - Risk Management

Contract	Premium	Avg. Indemnity	Gain Ratio	Freq. Pay in Bad Cond.
Apr-May + Jun-Jul + Sep-Oct 0.1 + 0.3 + 0.6	$284.87	$592.90	2.08	90%
Apr-May + Jun-Jul + Sep-Oct 0.1 + 0.4 + 0.5	$278.15	$572.98	2.06	90%
Apr-May + Jun-Jul + Sep-Oct 0.1 + 0.5 + 0.4	$271.42	$553.06	2.04	90%
Apr-May + Jun-Jul + Sep-Oct 0.2 + 0.2 + 0.6	$283.02	$572.23	2.02	90%
Apr-May + Jun-Jul + Sep-Oct 0.1 + 0.6 + 0.3	$264.70	$533.14	2.01	90%
Feb-Mar + Apr-May + Jun-Jul + Sep-Oct 0.1 + 0.1 + 0.2 + 0.6	$290.71	$583.83	2.01	90%

Profit Maximization Strategy

Top 5 Contracts - Profit Maximization

Contract	Premium	Avg. Indemnity	Gain Ratio	Freq. Pay in Bad Cond.
Jun-Jul + Sep-Oct 0.4 + 0.6	$286.72	$613.57	2.14	80%
Jun-Jul + Sep-Oct 0.5 + 0.5	$280.00	$593.65	2.12	80%
Jun-Jul + Sep-Oct 0.6 + 0.4	$273.27	$573.73	2.10	80%
Mar-Apr + Jun-Jul + Sep-Oct 0.1 + 0.3 + 0.6	$288.58	$602.31	2.09	100%
Apr-May + Jun-Jul + Sep-Oct 0.1 + 0.3 + 0.6	$284.87	$592.90	2.08	90%
Mar-Apr + Jun-Jul + Sep-Oct 0.1 + 0.4 + 0.5	$281.85	$582.39	2.07	100%

Which Interval Selection Strategy to Use?

- Tradeoff between risk exposure and returns.
  - Tradeoff may be less significant in IA compared to other states
- Premium subsidy can incentivize selecting riskier intervals.
  - Risker interval $\implies$ Higher Premium $\implies$ Bigger Subsidy
- What will work best for you depends on your goals, appetite for risk, pasture location, forage system.
- Many excellent resources are available to support you!

Additional PRF Resources

- USDA PRF Support Tool → https://public-rma.fpac.usda.gov/apps/PRF
  - Find your grid(s)
  - See historical index performance
  - Estimate subsidized premiums and indemnities across different contract choices (e.g. intervals, coverage, use, etc.)
- Your local USDA-authorized insurance agent and farm advisor team
- Iowa State Ag Decision Maker

Key Takeaways

- PRF is an effective, flexible, and subsidized insurance policy.
- But it's underutilized.
- Iowans are using various, well-informed strategies to make the most of it.

Scan for a 1 page summary!