Pasture, Rangeland and Forage Rainfall Index Insurance

An insurance product for livestock and forage producers

College of Agricultural, Consumer & Environmental Sciences
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

farmdoc
Illinois Extension

Brittney Goodrich

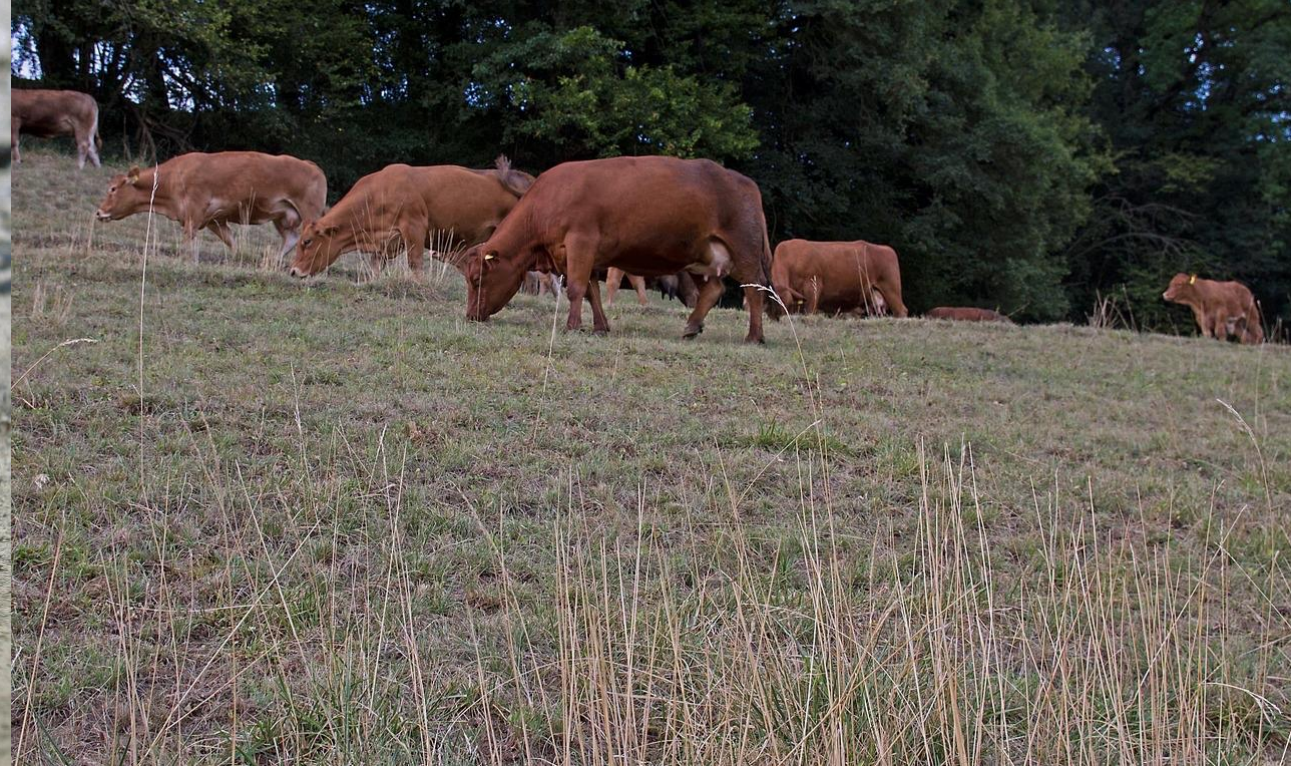
Topics

- What is **Pasture, Rangeland and Forage Insurance (PRF)** and how does it work?
- PRF use in Illinois
- Exploring enrollment approaches using USDA RMA online decision tool for PRF

USDA Risk Management Agency
U.S. DEPARTMENT OF AGRICULTURE

Rainfall Index Insurance for Pasture, Rangeland and Forage

- Crop insurance program offered by USDA Risk Management Agency
- Provides producers with insurance against drought-like conditions which would affect forage production
  - Payments offset increased costs of production or decreased revenues
- Covers perennial pasture, rangeland, or forage used to feed livestock



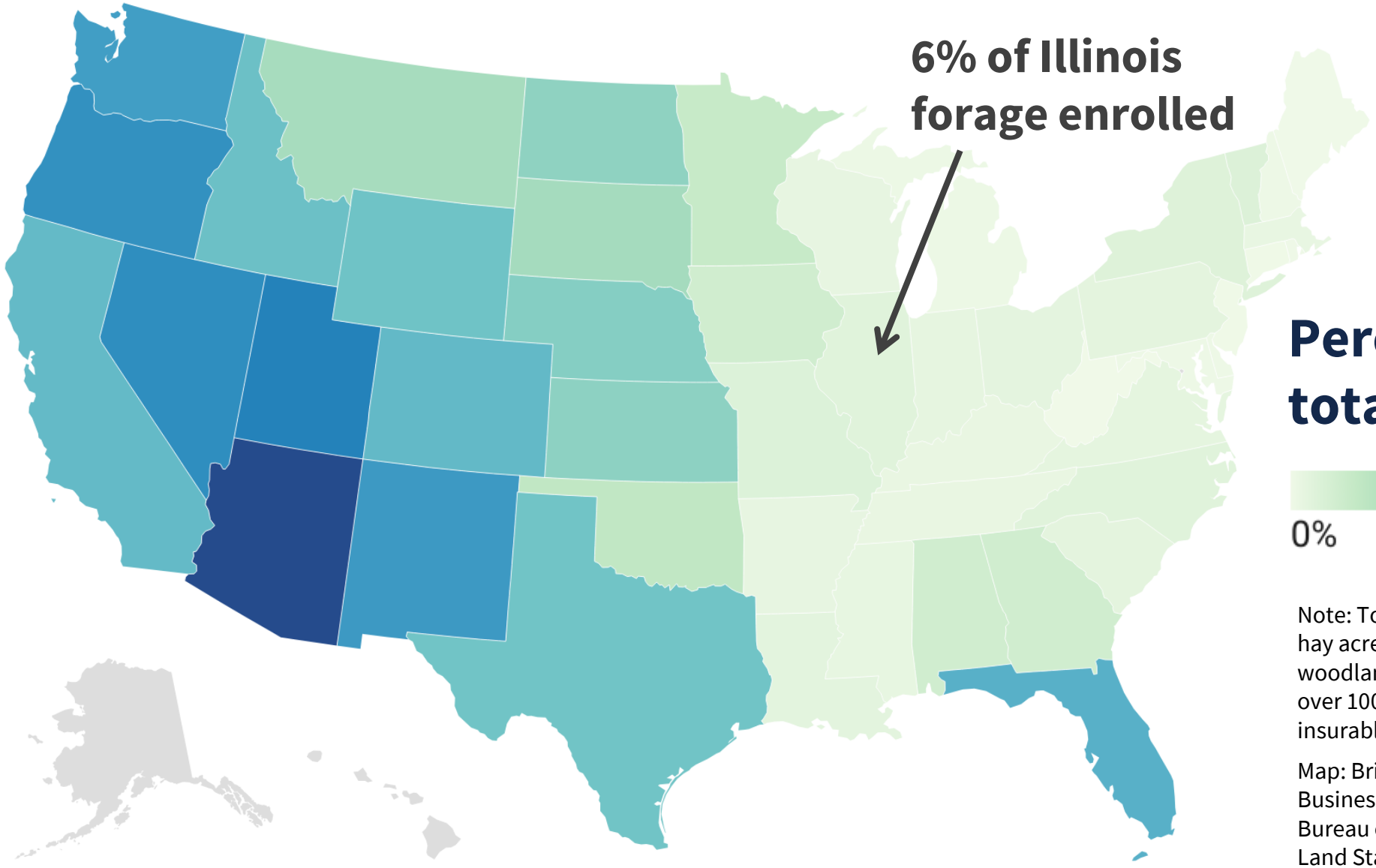
Catastrophic coverage

- Livestock Forage Disaster Assistance (LFP)
- Non-insured Crop Disaster Assistance (NAP)

Buy-up coverage

- Pasture, Rangeland and Forage Insurance (PRF)

2024 PRF Enrollment



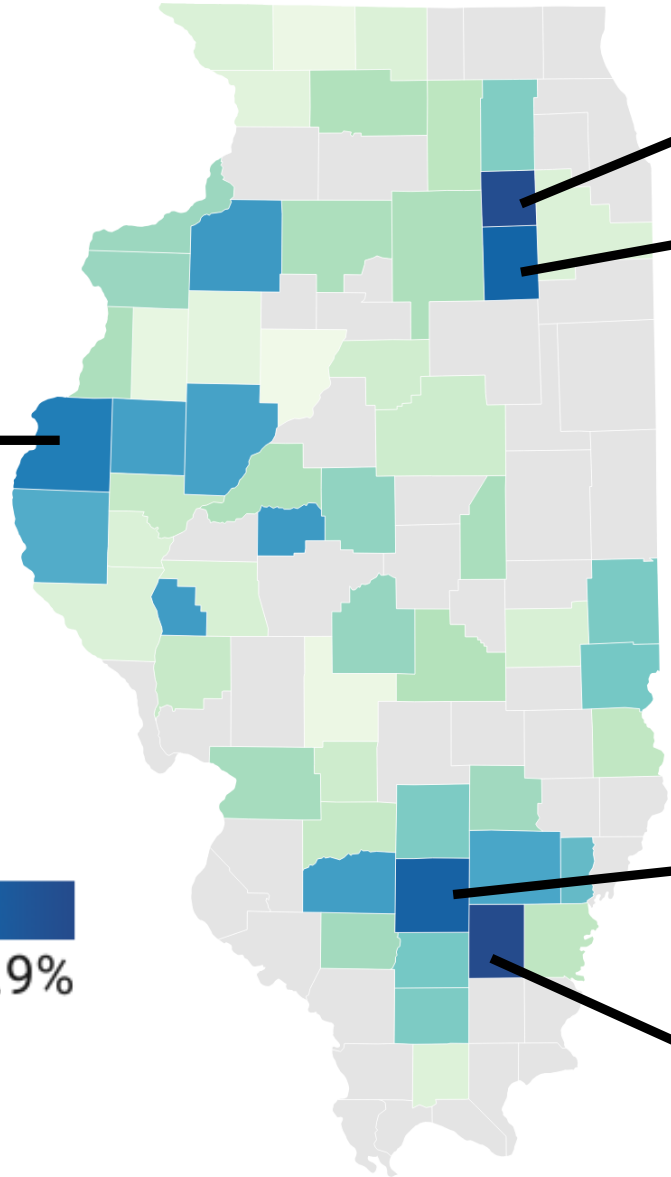
Percentage of total available forage

0% 122%

Note: Total forage acreage is the sum of harvested hay acreage, pastureland (excluding cropland and woodland), and BLM rangeland. Percentages can be over 100% due to multiple producers having insurable interest on the same land.

Map: Brittney Goodrich • Source: USDA Summary of Business, 2022 USDA Census of Agriculture, and Bureau of Land Management (BLM) 2023 Public Land Statistics • Created with Datawrapper

2024 Illinois PRF Enrollment



Kendall (27%)

Grundy (23%)

Hancock (20%)

Jefferson (24%)

Hamilton (27%)

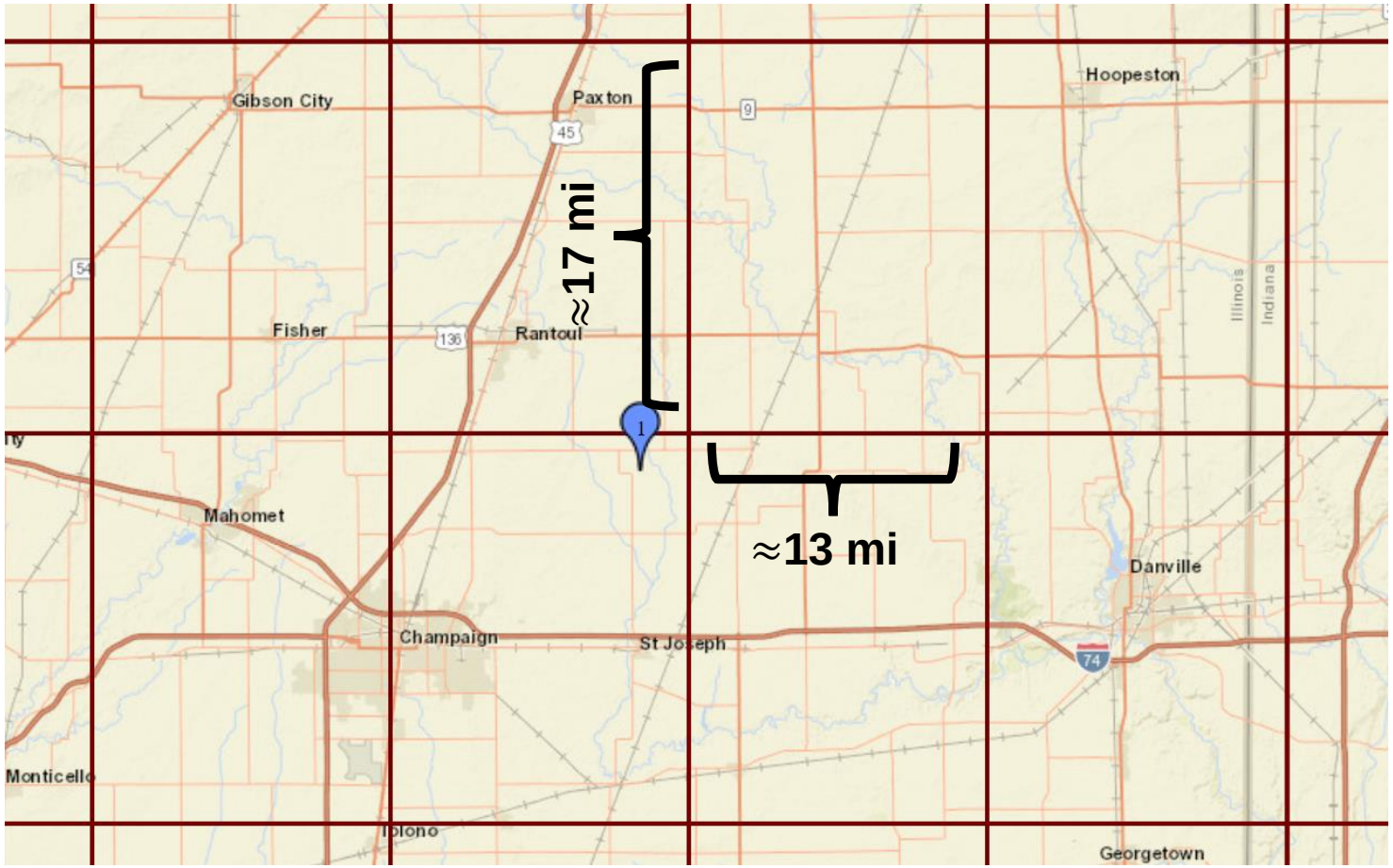
Percentage of total available forage

1.0% 26.9%

Note: Total forage acreage is the sum of harvested hay acreage and pastureland (excluding cropland and woodland).

Map: Brittney Goodrich • Source: USDA Summary of Business and 2022 USDA Census of Agriculture • Created with Datawrapper

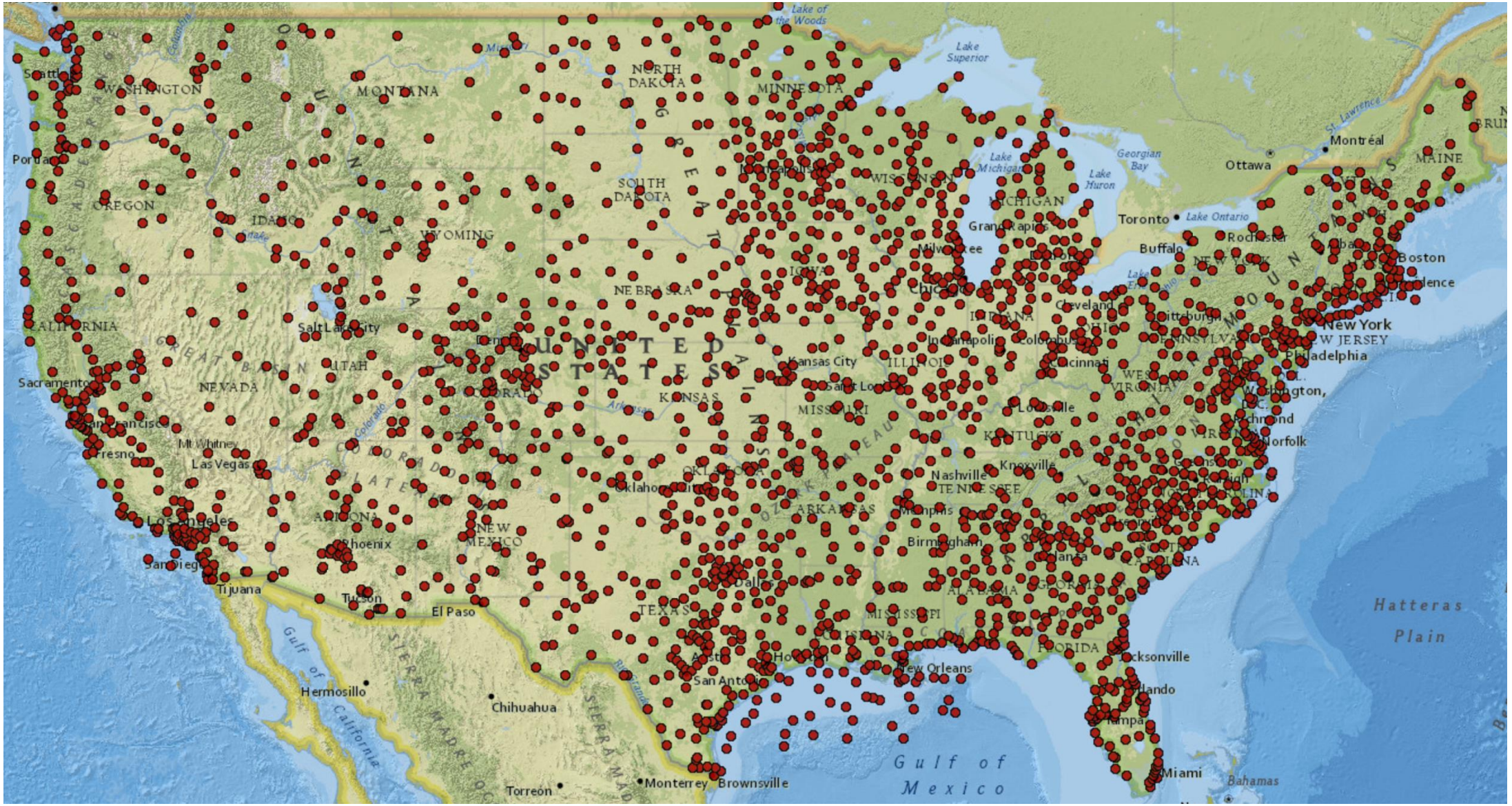
PRF is Area-Based Insurance



Not based directly on forage yield

- Uses National Oceanic and Atmospheric Administration (NOAA) grid system to measure rainfall index and payment
- Rainfall index: Weighted average of 4 closest weather stations to grid

NOAA Weather Stations



PRF Basics

- Insured value of policy based on production practices and county base values
- Guarantee from 70% to 90% of historical average rainfall
- Policy runs January to December
  - Choose months you want to insure

PRF Decisions

Insured Acres: Number of acres to be insured

- Not all acres must be insured
- No minimum

PRF Decisions

Intended Use: Hay or Grazing

- If Intended Use is Hay:
  - Irrigation Practice: Irrigated or Non-irrigated
  - Organic certified, transitional, or neither
- Intended use decision determines County Base Value
  - Hay acreage typically valued higher than pasture
    - ➢ Translates to higher premiums for hay

County Base Values

Determined value of the crop in the county by Federal Crop Insurance Corporation

Grazing value ≈

- **Yield:** Uses Animal Unit Month data for each county to determine "yield" for grazed acreage
- **Price:** State level hay prices and/or grazing fees
- Meant to cover price of alternative feeding

County Base Values

Determined value of the crop in the county by Federal Crop Insurance Corporation

Hay value≈

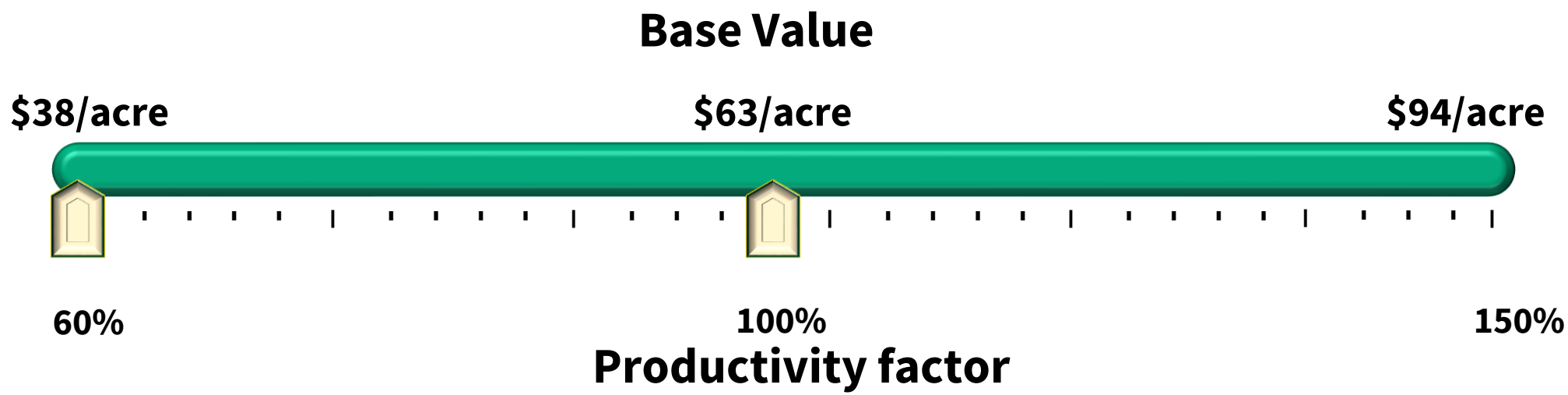
- **Irrigated:** Value reflects additional costs of irrigation when precipitation is lacking
  - Assumes no production loss
- **Non-irrigated:** Average county yield and state-level hay prices

PRF Decisions: Productivity Factor

Is your acreage more or less productive than other hay/pasture acreage in your area on average?

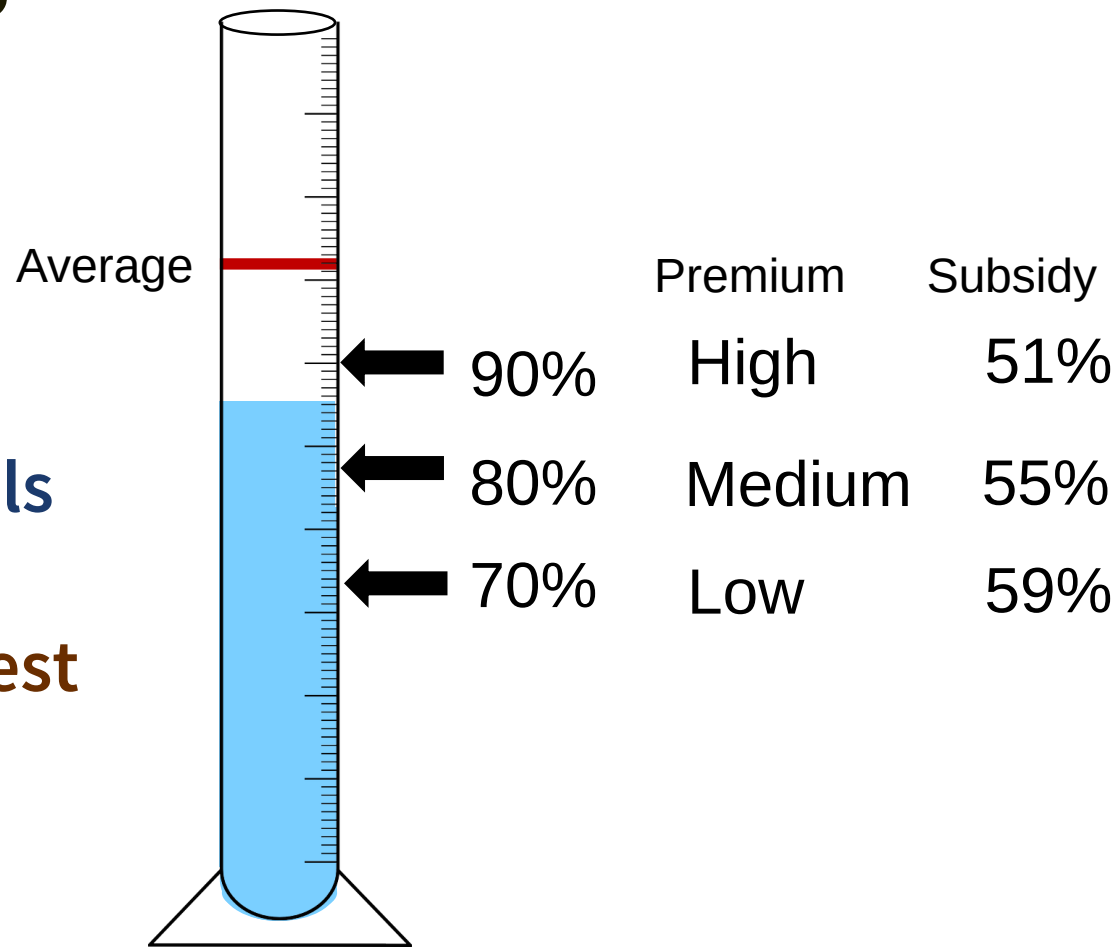
- 60-150% used to adjust county base value
- Higher %= Higher premium
  - Higher payout if low rainfall

Example: County Base Value at $63 per acre



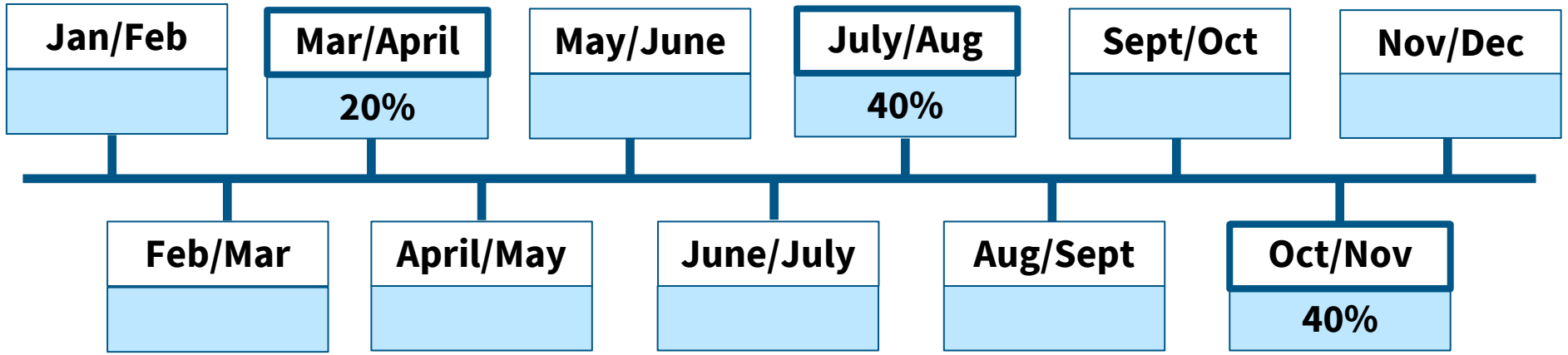
PRF Decisions: Coverage Level

- At what percentage of average rainfall do you want the payments to kick in?
  - 70, 75, 80, 85, or 90%
  - Higher %= Higher cost of insurance
    - Higher likelihood of payout
  - Subsidy levels vary with coverage levels (51-59%)
    - Lower coverage levels receive highest subsidy (59%)



PRF Decisions: Two-month intervals

Placing 20% in a two-month interval means insuring 20% of total policy value against low rainfall during those months



20% + 40% + 40% = 100%

PRF Decisions: Two-Month Intervals

PRF designed to be actuarily fair

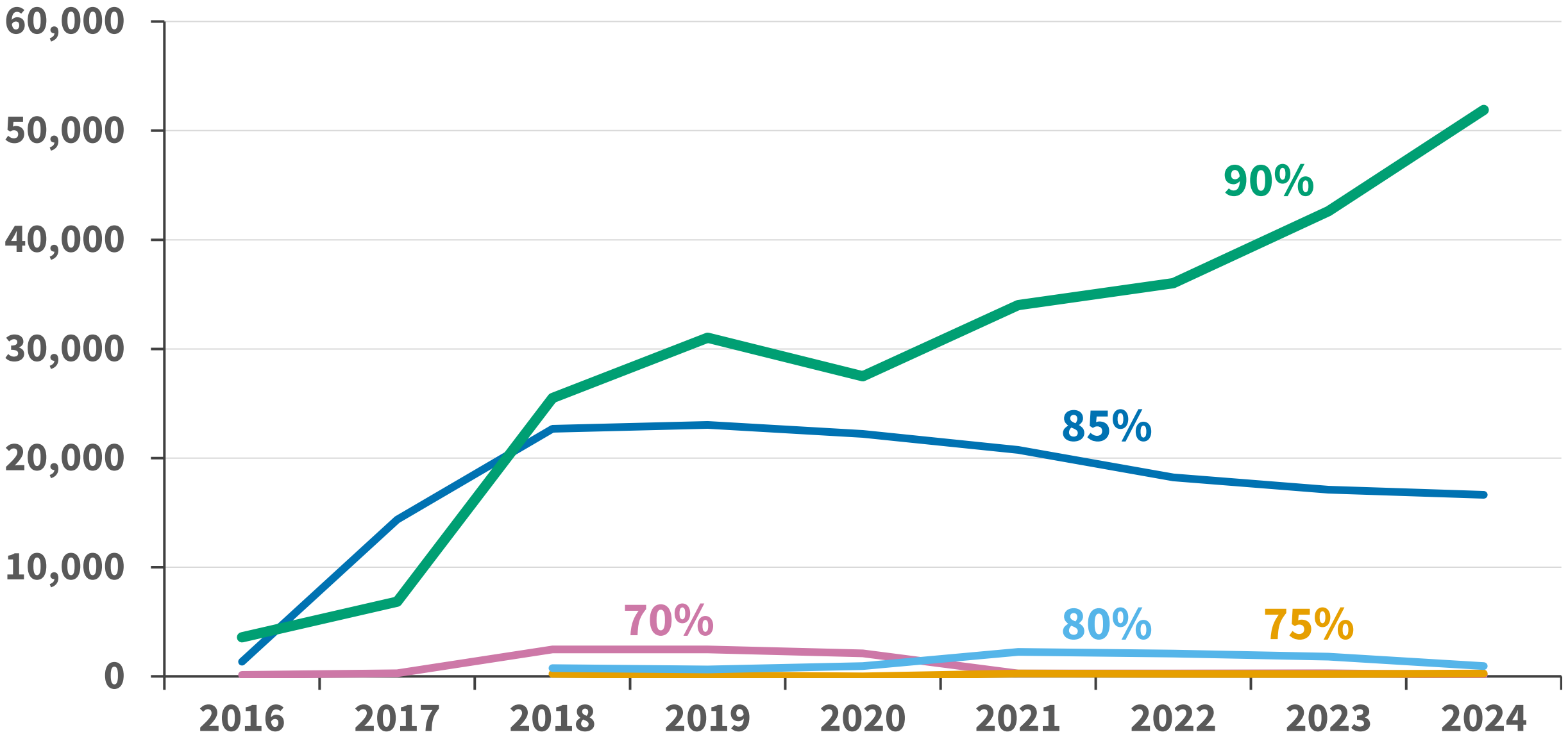
- **Over time**
  indemnities paid out ≈ premiums paid in
- Intervals with higher rainfall variability
  - Higher likelihood of indemnity payout
  - Higher premiums
- Two-month interval premiums vary by grid

Grid 24168 in Champaign Co.

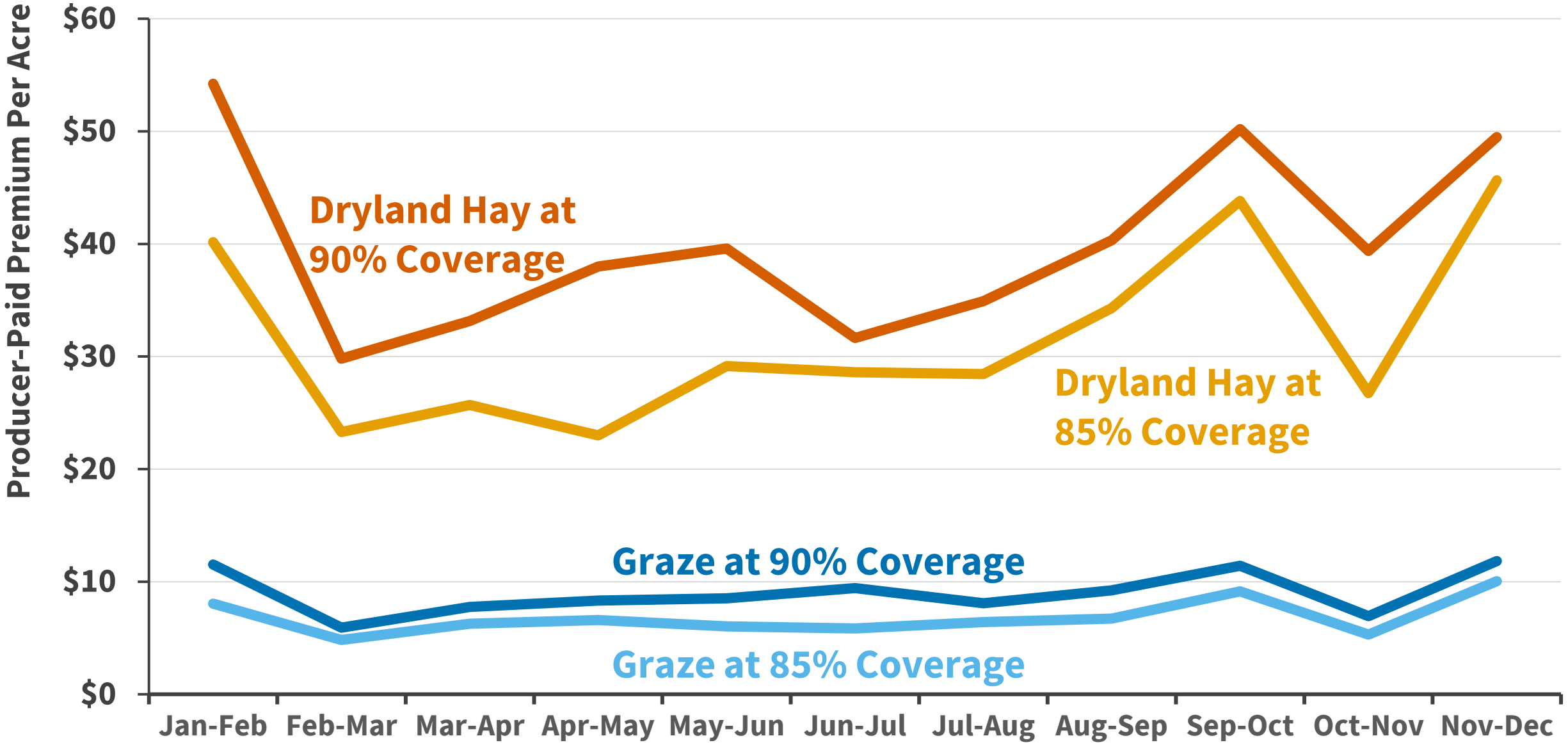
Index Interval	Premium Rate Per $100
Jan-Feb	16.82
Feb-Mar	12.79
Mar-Apr	10.77
Apr-May	11.15
May-Jun	13.32
Jun-Jul	13.73
Jul-Aug	12.57
Aug-Sep	14.16
Sep-Oct	14.14
Oct-Nov	12.12
Nov-Dec	16.22

PRF Use in Illinois

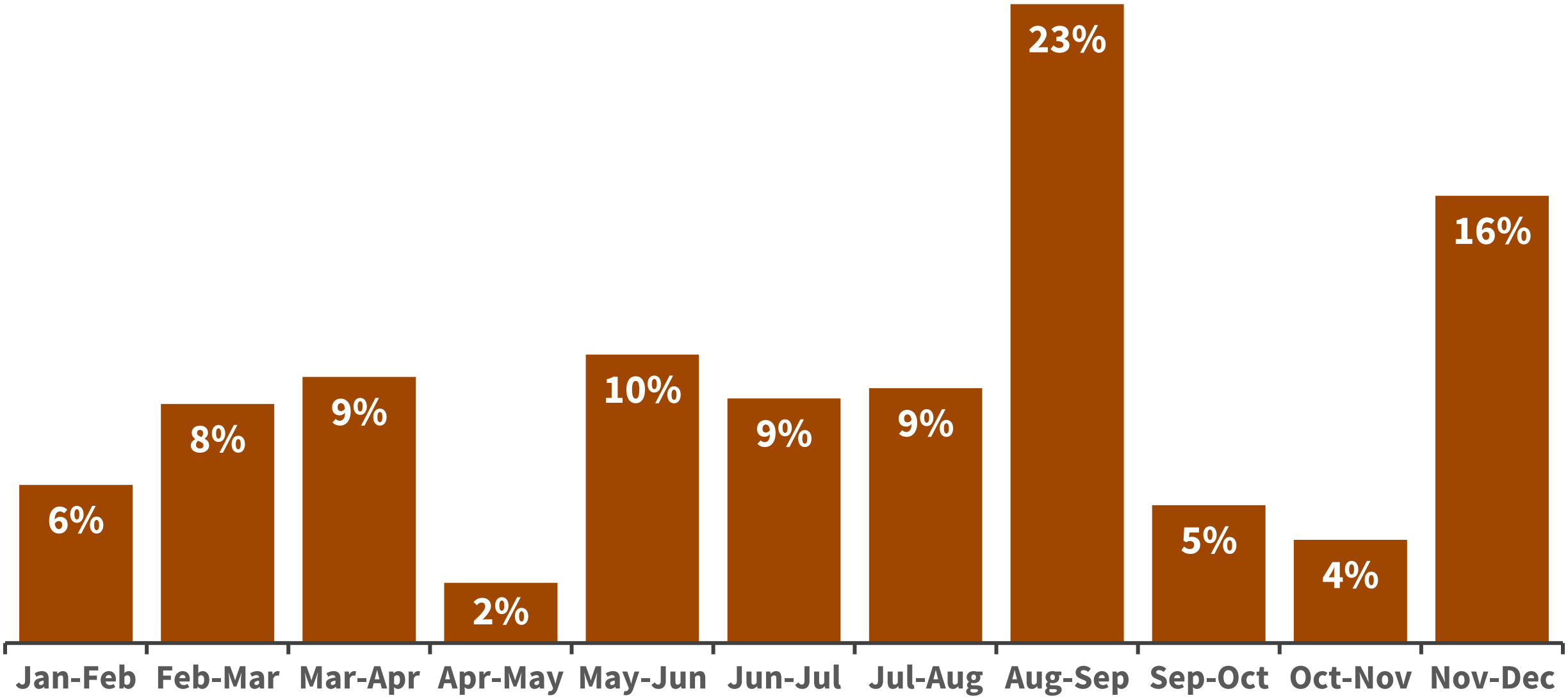
PRF Acreage Enrolled by Coverage Level



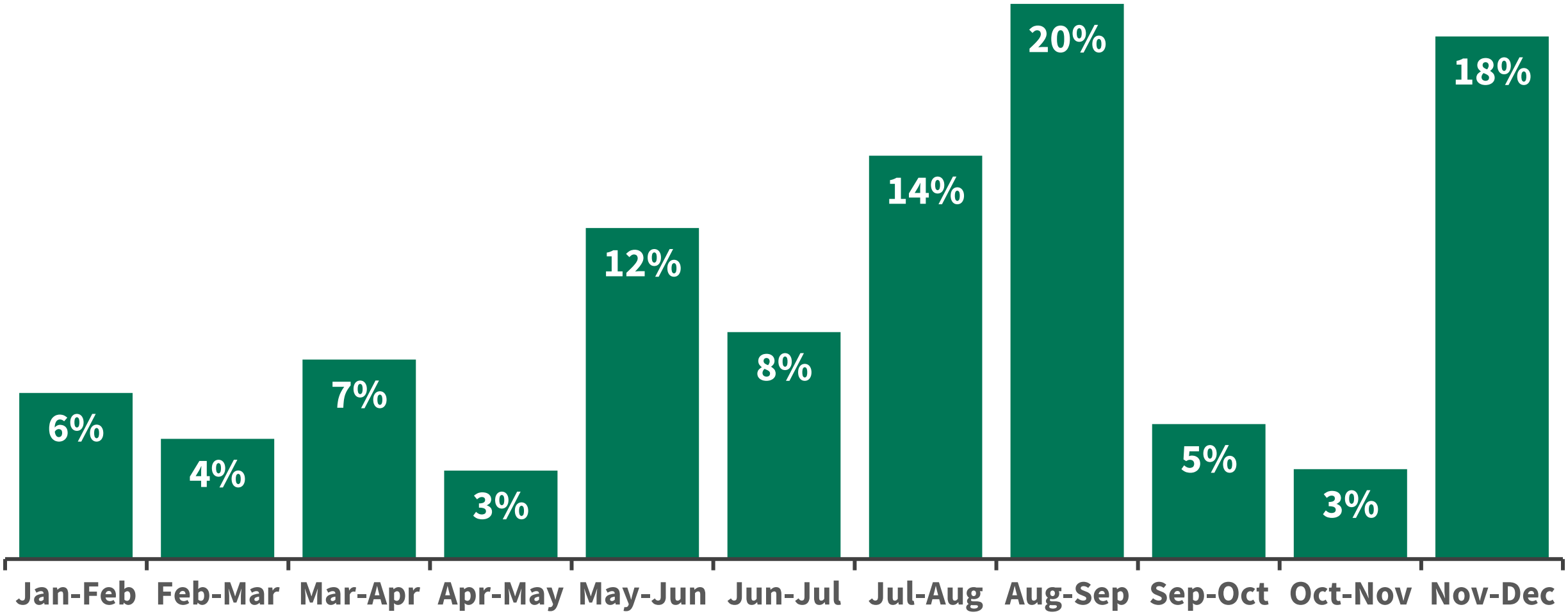
2024 IL Producer-Paid Premium



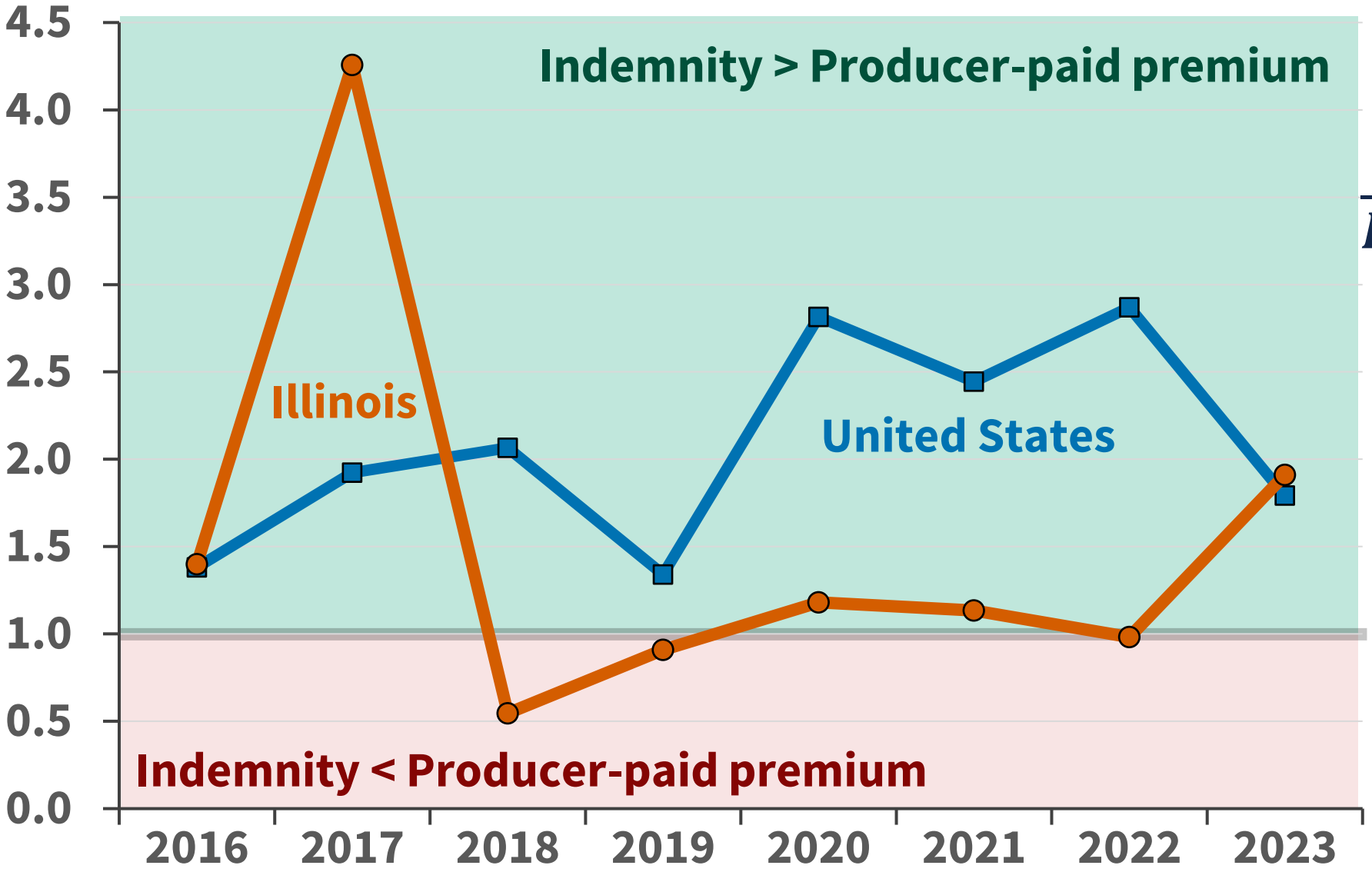
Proportion of Hay Acreage by Interval



Proportion of Pasture Acreage by Interval



2016-2023 Producer Gain Ratios



Producer Gain Ratio

$$\frac{Indemnity}{Premium - Subsidy}$$

Indemnity = Producer-paid premium

Selecting Two-month Intervals

Using the USDA RMA decision tool to inform PRF decisions

https://public-rma.fpac.usda.gov/apps/PRF

Which intervals should I enroll in?

Profit-maximization approach

Enroll in intervals with highest rainfall variability

- Due to subsidies these are most likely to pay an indemnity and result in net gains
- Indemnities may be unrelated to forage production

Risk management approach

Enroll in intervals when a lack of rainfall will have most impact on forage growth

- Indemnities should be related to forage production

Which intervals should I enroll in?

Preferred approach will depend on individual preferences

Profit-maximization approach

Risk management approach

Comparing the two approaches

Example using PRF decision tool for Grid 24168, Champaign County

Risk management

Approximate growing season in IL

		33%		33%		34%				
Jan-Feb	Feb-Mar	Mar-Apr	Apr-May	May-Jun	Jun-Jul	Jul-Aug	Aug-Sep	Sep-Oct	Oct-Nov	Nov-Dec
33%								33%		34%

Highest variable intervals on average in IL

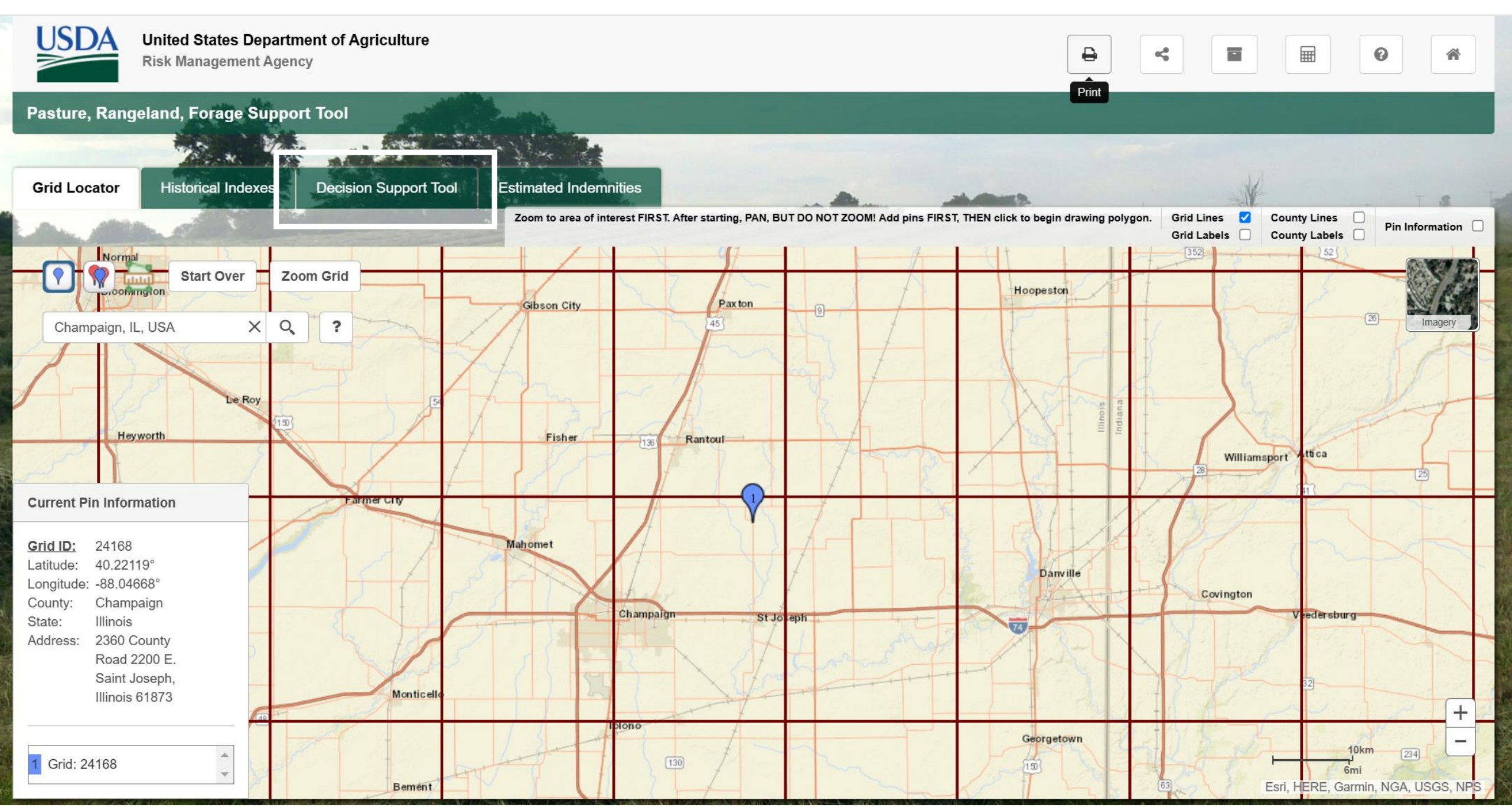
Profit maximization

Note: These are for illustration purposes only and do not indicate optimal profit-maximization or risk management strategies for any individual policy.

Steps:

1. Enter Risk Management approach into USDA RMA decision tool
2. Collect data on historical indemnities
3. Repeat for Profit Maximization approach
4. Compare outcomes

https://public-rma.fpac.usda.gov/apps/PRF


USDA
United States Department of Agriculture
Risk Management Agency
Print
Pasture, Rangeland, Forage Support Tool
Grid Locator
Historical Indexes
Decision Support Tool
Estimated Indemnities
Zoom to area of interest FIRST. After starting, PAN, BUT DO NOT ZOOM! Add pins FIRST, THEN click to begin drawing polygon.
Grid Lines
Grid Labels
County Lines
County Labels
Pin Information
Start Over
Zoom Grid
Champaign, IL, USA
Imagery
Current Pin Information
Grid ID: 24168
Latitude: 40.22119°
Longitude: -88.04668°
County: Champaign
State: Illinois
Address: 2360 County Road 2200 E. Saint Joseph, Illinois 61873
1 Grid: 24168
Normal
Bloomington
Gibson City
Paxton
Hoopeston
Le Roy
Heyworth
Fisher
Rantoul
Farmer City
Mahomet
Champaign
St Joseph
Danville
Covington
Veedersburg
Williamsport
Attica
Monticello
Ivesdale
Georgetown
Bement
Illinois
Indiana
10km
6mi
Esri, HERE, Garmin, NGA, USGS, NPS

United States Department of Agriculture
Risk Management Agency

Pasture, Rangeland, Forage Support Tool

Grid Locator | Historical Indexes | **Decision Support Tool** | Estimated Indemnities

Location Information

State	County	Grid ID		Search By Grid ID	
Illinois	Champaign	24168	OR	Enter Grid ID	Search

Protection Information

Intended Use	Haying
Irrigation Practice	Non-Irrigated
Organic Practice	Not Organic
Coverage Level	90%
Productivity Factor	100%
Insurable Interest	100%
Insured Acres	1
Sample Year	2024

Policy Information

County Base Value	$460.00
Dollar Amount of Protection	$414.00
Total Insured Acres	1
Total Policy Protection	$415
Subsidy Level	51.0%
Maximum Percent of Value per Index Interval	60.0%

Protection Table

Export to CSV

Index Interval	Percent of Value (%)	Policy Protection Per Unit	Premium Rate Per $100	Total Premium	Premium Subsidy	Producer Premium	Actual Index Value	Estimated Indemnity
Jan-Feb	N/A	$0	16.82	$0	$0	$0	130.2	$0
Feb-Mar	N/A	$0	12.79	$0	$0	$0	50.0	$0
Mar-Apr	33	$137	10.77	$15	$8	$7	121.6	$0
Apr-May	N/A	$0	11.15	$0	$0	$0	146.7	$0
May-Jun	33	$137	13.32	$18	$9	$9	90.4	$0
Jun-Jul	N/A	$0	13.73	$0	$0	$0	111.6	$0
Jul-Aug	34	$141	12.57	$18	$9	$9	151.9	$0
Aug-Sep	N/A	$0	14.16	$0	$0	$0	N/A	N/A
Sep-Oct	N/A	$0	14.14	$0	$0	$0	N/A	N/A
Oct-Nov	N/A	$0	12.12	$0	$0	$0	N/A	N/A
Nov-Dec	N/A	$0	16.22	$0	$0	$0	N/A	N/A
Per Acre	**N/A**	**N/A**	**N/A**	**$51.00**	**$26.00**	**$25.00**	**N/A**	**$0**
Total	**1**	**$415**	**N/A**	**$51**	**$26**	**$25**	**N/A**	**$0**

Calculate

This tool is using insurance data from 2025.

This tool is for illustration purposes only. Your actual information may differ.

ILLINOIS

farmdoc

Protection Information

Intended Use	Haying
Irrigation Practice	Non-Irrigated
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ILLINOIS

State: Illinois | County: Champaign | Grid ID: 24168

Protection Table

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Aug-Sep	N/A	$0	14.16	$0	$0	$0	N/A	N/A
Sep-Oct	N/A	$0	14.14	$0	$0	$0	N/A	N/A
Oct-Nov	N/A	$0	12.12	$0	$0	$0	N/A	N/A
Nov-Dec	N/A	$0	16.22	$0	$0	$0	N/A	N/A
Per Acre	**N/A**	**N/A**	**N/A**	**$51.00**	**$26.00**	**$25.00**	**N/A**	**$0**
Total	**1**	**$415**	**N/A**	**$51**	**$26**	**$25**	**N/A**	**$0**

Calculate

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This tool is for illustration purposes only. Your actual information may differ.

Pasture, Rangeland, Forage Support Tool

Grid Locator | Historical Indexes | **Decision Support Tool** | Estimated Indemnities

Location Information

State: Illinois | County: Champaign | Grid ID: 24168 | OR | Search By Grid ID: Enter Grid ID | Search

Protection Information

Intended Use	Haying
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Aug-Sep	N/A	$0	14.16	$0	$0	$0	N/A	N/A
Sep-Oct	N/A	$0	14.14	$0	$0	$0	N/A	N/A

Pasture, Rangeland, Forage Support Tool

Historical Filter

Year Range

End: 2024

Start: 1948

Estimated Indemnities

Export to CSV

Year	Jan-Feb	Feb-Mar	Mar-Apr	Apr-May	May-Jun	Jun-Jul	Jul-Aug	Aug-Sep	Sep-Oct	Oct-Nov	Nov-Dec
2024	0	0	0	0	0	0	0	N/A	N/A	N/A	N/A
2023	0	0	$12	0	$67	0	0	0	0	0	0
2022	0	0	0	0	$48	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	$14	0	0	0	0
2019	0	0	0	0	0	0	$32	0	0	0	0
2018	0	0	$10	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	$28	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	$18	0	0	0	$31	0	0	0	0
2014	0	0	$19	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	$63	0	0	0	0
2012	0	0	$57	0	$38	0	$21	0	0	0	0
2011	0	0	0	0	0	0	$86	0	0	0	0
2010	0	0	$16	0	0	0	$35	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0

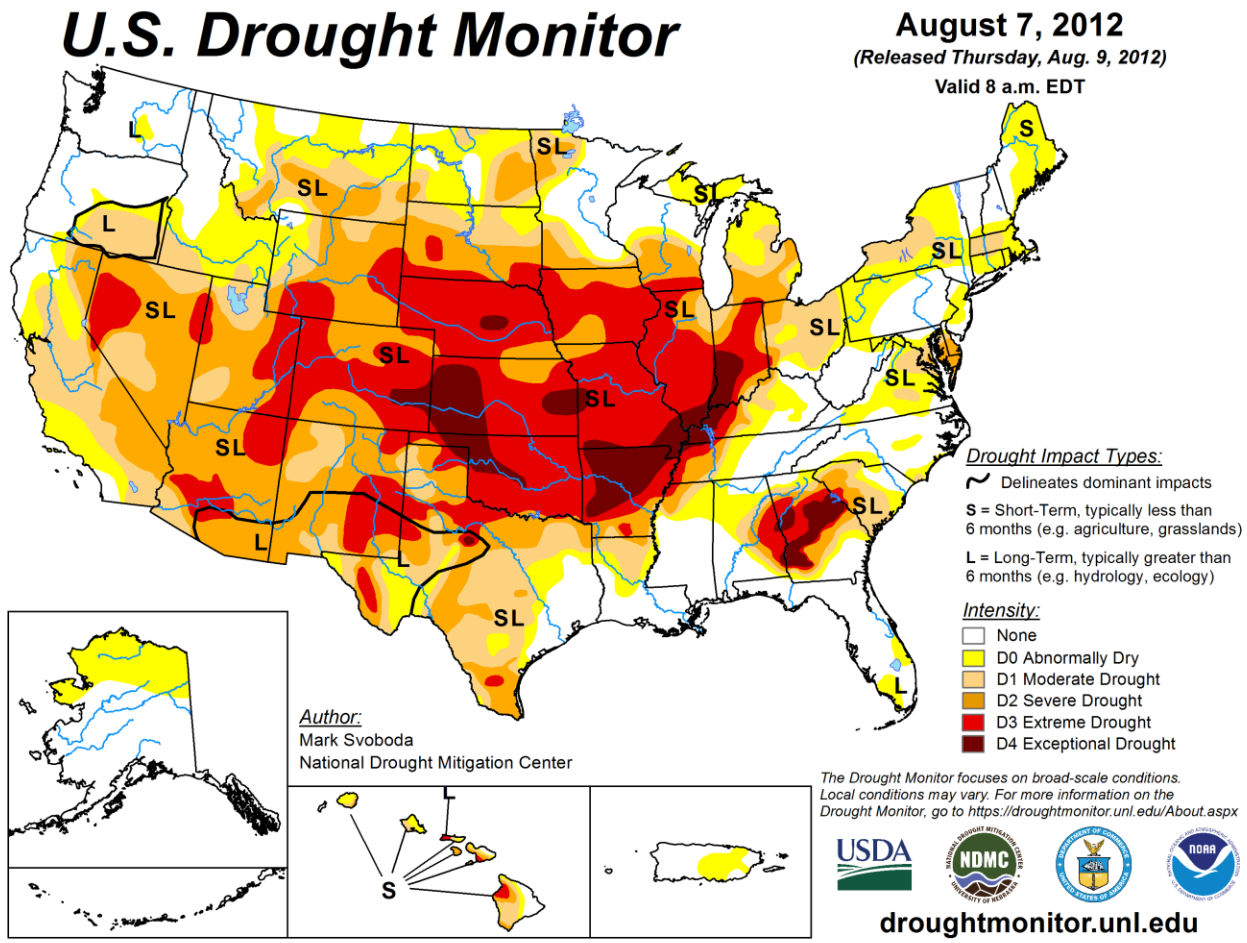
	Profit Maximization Jan-Feb 33% Sep-Oct 33% Nov-Dec 34%	Risk Management Mar-Apr 33% May-Jun 33% Jul-Aug 34%
Average Indemnity (1970-2023)	$50/acre	$38/acre
2025 Policy Premium	$65/acre	$51/acre
2025 Premium Subsidy	- $34/acre	- $26/acre
2025 Producer Premium	= $31/acre	= $25/acre
Average net producer gain (Avg. indemnity-producer premium)	$19/acre	$13/acre
Correlation coefficient between indemnity and Illinois avg hay yield (1970-2023)	-0.02	-0.40

Another consideration: What are the payouts in bad years?

2012: Lowest average IL hay yield since 1988

2012 PRF Estimated Indemnities:

- Risk management: $116/acre
- Profit maximization: $50/acre



Concluding thoughts

- PRF should be considered by Midwest livestock and forage producers
  - 2016-2023 IL participants averaged $1.29 in indemnity payments for each $1 of producer-paid premium
- Flexible policies allow for customization to many different forage systems
- Producers influence amount of risk protection with two-month interval choices

Important PRF-RI Insurance Decisions: Which Months to Insure?

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Department of Agricultural and Consumer Economics
University of Illinois

November 8, 2024
farmdoc daily (14):204

Pasture, Rangeland and Forage Rainfall Index Insurance (PRF-RI) is an underutilized insurance product by livestock and forage producers in the Midwest (see *farmdoc daily* article from October 9, 2024). One aspect of PRF-RI that sets it apart from traditional crop insurance is that producers choose the months they want to insure against low rainfall. This allows for flexibility in insuring different types of forage production systems that may benefit from rainfall at different times during the year. Enrolling in different months throughout the year affects the total premium paid by the producer, the amount and frequency of indemnities collected, and ultimately how much forage production risk is managed through PRF-RI.

Background: Determinants of PRF-RI Premiums

PRF-RI insurance premiums are set by the USDA Risk Management Agency (RMA) with the goal of being actuarily fair, or in other words on average over time the indemnities paid out from PRF-RI approximately equal the premiums collected. Premiums typically will increase as the frequency and size of indemnity payments increase. Thus, PRF-RI premiums vary depending on the per-acre value insured, two-month intervals selected, and coverage levels chosen which each impact the size and likelihood of an indemnity payment.

PRF-RI is subsidized, so even though total premiums are meant to approximately equal indemnities over time, on average producer-paid premiums (premium less subsidy) will be lower than indemnities. Subsidy levels depend on the coverage level selected as follows: 70% and 75% policies receive a 59% premium subsidy, 80% and 85% policies receive 55%, and 90% policies receive 51%.

Figure 1 displays the average Illinois producer-paid premium for two PRF-RI intended uses in 2024:

1. Hay (Non-irrigated, conventional)
2. Grazing

Figure 1. Illinois Producer-paid PRF-RI Premium by Two-Month Interval, Intended Use and Coverage Level, 2024

Pasture, Rangeland and Forage Rainfall Index Insurance: An Insurance Product for Illinois Livestock and Forage Producers

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Department of Agricultural and Consumer Economics
University of Illinois

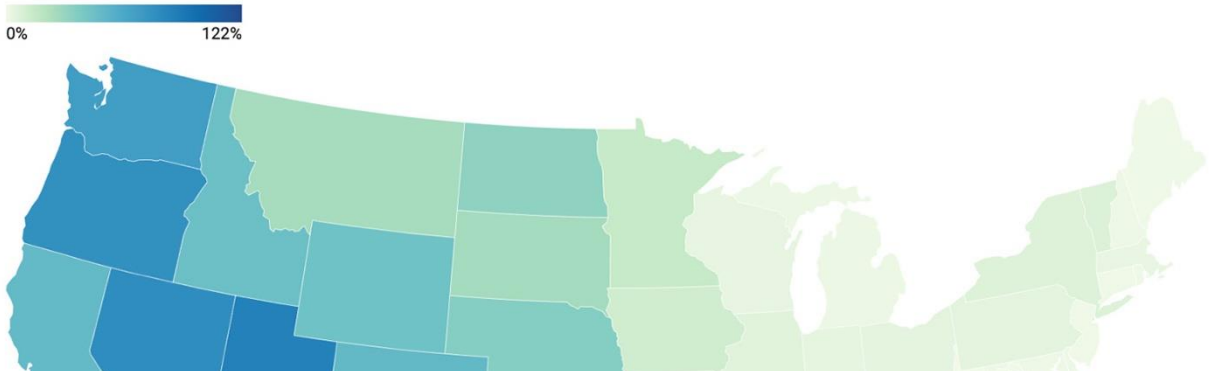
October 9, 2024
farmdoc daily (14):184

The Pasture, Rangeland and Forage Rainfall Index (PRF-RI) is a crop insurance product underutilized by Illinois livestock and forage producers. Only 6% of the eligible acres in Illinois were insured in 2024, much lower than use west of the Mississippi. Like other Federal crop insurance programs, PRF-RI is heavily subsidized. Over time, PRF-RI has returned $1.29 in payments for each $1.00 in producer-paid premium. Illinois and Midwest livestock and forage producers should consider using PRF-RI as a risk management tool.

PRF-RI Use in Illinois

PRF-RI has been available as a risk management tool for livestock and forage producers in Illinois since 2016. According to the 2022 USDA Agricultural Census, Illinois producers operated roughly 742,000 acres of pasture and 473,000 acres were harvested for hay production. In 2024, approximately 70,000 acres were enrolled in PRF-RI, meaning less than 6% of eligible forage land in Illinois is enrolled in this subsidized insurance program. As seen in Figure 1, this participation rate is much lower than participation in states west of the Mississippi River.

Figure 1. 2024 PRF-RI Enrollment Rate by State



Pasture, Rangeland and Forage Insurance

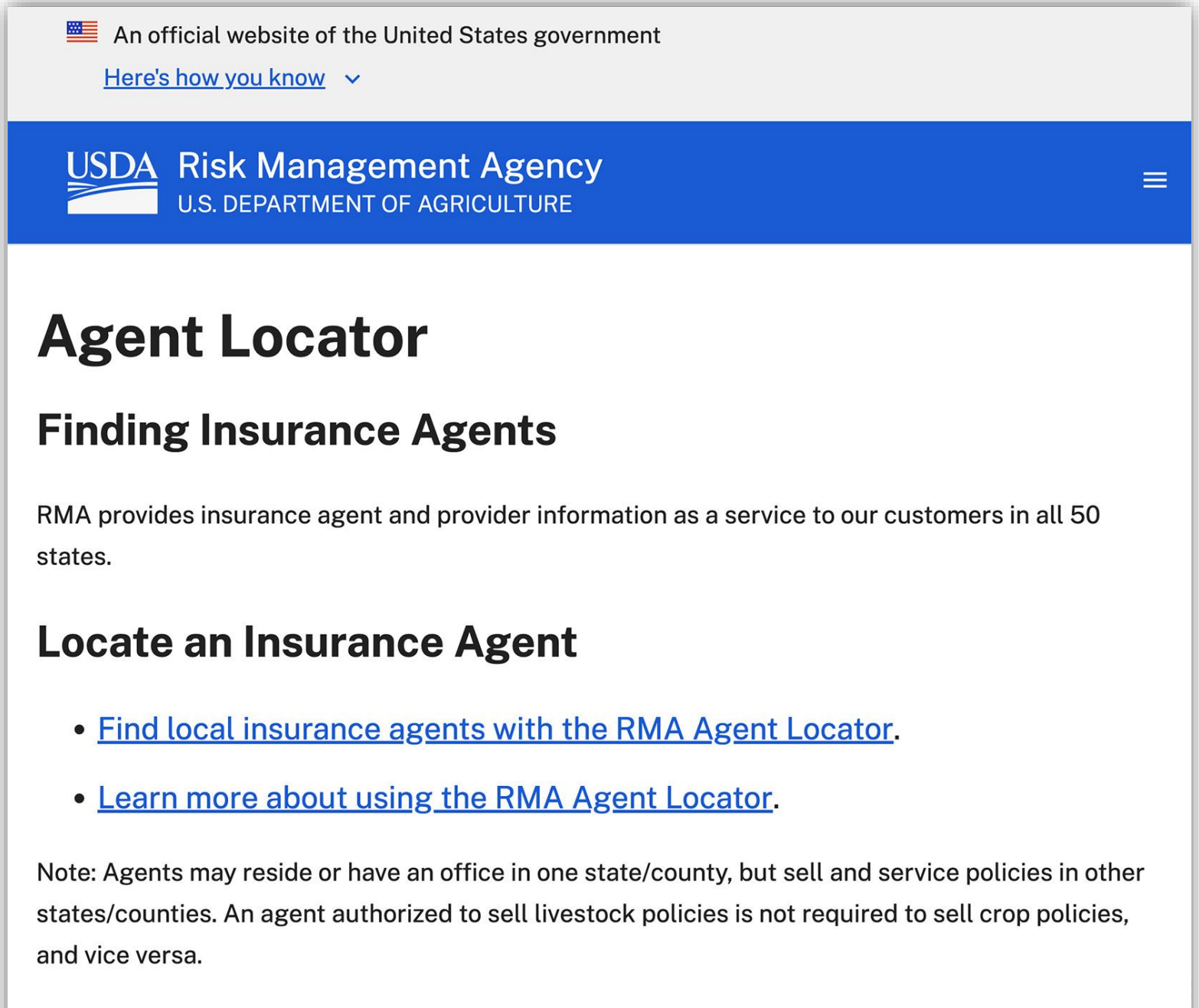
Important Dates

2025
Enrollment deadline
December 1, 2024

Premium
payment due
September 1, 2025

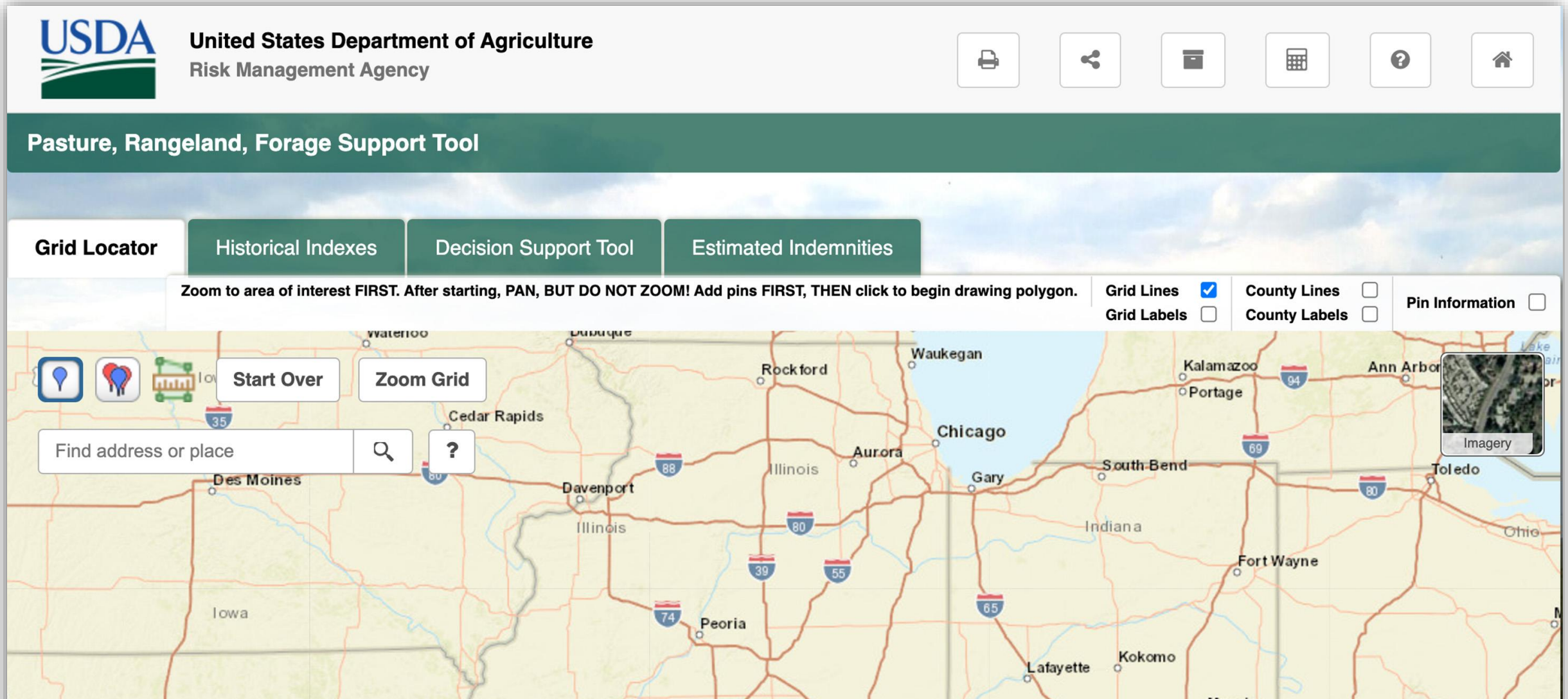
Purchase Pasture, Rangeland and Forage Insurance from USDA RMA Certified Crop Insurance Agent

https://www.rma.usda.gov/tools-reports/agent-locator



USDA RMA Decision Tool

https://public-rma.fpac.usda.gov/apps/PRF



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