

# Pasture, Rangeland, Forage (PRF) Insurance in Missouri

**F**orage and livestock producers can buy insurance to mitigate forage production risk (Figure 1). Pasture, rangeland, forage (PRF) insurance was developed by the U.S. Department of Agriculture (USDA) Risk Management Agency (RMA). PRF insurance is based on a rainfall index and provides coverage when the precipitation in an area declines from its long-term, historical norm. The deadline to enroll for this insurance is December 1 before the calendar year being covered.



**Figure 1.** Drought risk for grazing beef or dairy cattle may be partially mitigated with PRF insurance.

## How PRF insurance works

The rainfall index is based on data from the National Oceanic and Atmospheric Administration Climate Prediction Center that is specific to grid locations. Each grid area is 0.25 degrees in latitude by 0.25 degrees in longitude (approximately 17 miles by 13 miles in Missouri). The grids do not follow state, county or other geopolitical boundaries. The rainfall index is not based on individual farm or individual weather station precipitation data but rather is based on, or interpolated from, data from multiple weather stations. The historical

index value, also called the expected grid index, is set to a 100 percent level. An indemnity is paid when precipitation falls below an elected coverage level — the trigger grid index.

## Producer choices

Different options are available to provide coverage for a farm. Premiums will vary by the selections made by the producer. Each option should be considered when purchasing PRF insurance.

## Intended use

A producer using PRF insurance must select coverage for either grazing or haying purposes. Although acreage under one policy may only be selected to be insured for one intended use, producers can have separate policies even on the same farm, such as 50 acres in one field for grazing and another field of 50 acres for haying. Each intended use has its own base county value. The RMA assigns each grid area a base dollar value per acre for grazing which factors the costs of alternative feeds when forage is not available. Additionally, RMA assigns base dollar values per acre for hay and these are further segmented into non-irrigated, irrigated, and certified organic hay production. Non-irrigated county base values reflect hay yield and price data for individual counties. Irrigated hay county base values reflect the cost of additional irrigation needed due to lack of precipitation. Table 1 shows the range of county base values in Missouri for 2023.

**Table 1. Missouri county base values by use for 2023.**

Intended use	Low	High	Average
Grazing	\$37.50	\$63.60	\$50.05
Non-irrigated haying	\$148.00	\$281.00	\$219.16
Irrigated haying	\$62.00	\$91.00	\$76.39
Certified organic haying (non-irrigated)	\$178.00	\$338.00	\$263.51

Source: USDA Risk Management Agency

Written by  
**Ryan Milhollin**, Assistant Professor, Agricultural Business and Policy Extension  
**Ray Massey**, Professor, Agricultural Business and Policy Extension  
**Joe Horner**, State Specialist, Agricultural Business and Policy Extension

## Coverage level

Coverage levels range from 70 to 90 percent. The coverage level establishes the rainfall deviation from the index when insurance pays an indemnity. The government subsidizes different coverage levels at different rates. The government will pay 51 percent of the total premium at the 90 percent coverage level, 55 percent for 80 and 85 percent coverage, and 59 percent for the 70 and 75 percent coverage levels.

## Productivity factor

The productivity factor allows producers to customize their PRF insurance policy based on their specific situations. Producers may select a productivity factor between 60 and 150 percent and this will adjust the county base value per acre accordingly. This factor allows producers to adjust their forage value based on the specific productivity of their land. For example, if a farmer feels that a heavily fertilized hay crop needs more protection than the original county base level, then that farmer would select a productivity factor greater than 100 percent to increase the level of coverage.

## Index intervals

Producers choose coverage in two-month intervals (Figure 2). Factors to consider when determining which intervals to cover include the type of forage or crop, the intended use and the time period when precipitation is needed under normal conditions for the insured crop. Producers must allocate the percent of value across the

chosen intervals to equal 100 percent. A minimum of two separate and non-overlapping intervals must be selected. A minimum of 10 percent and maximum of 60 percent of the coverage may be attributed to any one interval.

## Grid location

A farm's grid identification is based on a point of reference selected by the producer. The point of reference must be within the boundaries of the acreage to be insured. RMA's website provides a [grid locator tool](https://prodwebnlb.rma.usda.gov/apps/prf) (<https://prodwebnlb.rma.usda.gov/apps/prf>) for identifying your land, establishing a point of reference and determining the grid identification (Figure 3). Multiple points of reference may be needed if acreage is noncontiguous or overlays into multiple grids, or if the intended use — haying or grazing — is different for part of the acreage. A producer may choose multiple points of reference within the insured acreage that are in different grids and have different base values and historical precipitation amounts.

### Index intervals

January and February

February and March

March and April

April and May

May and June

June and July

July and August

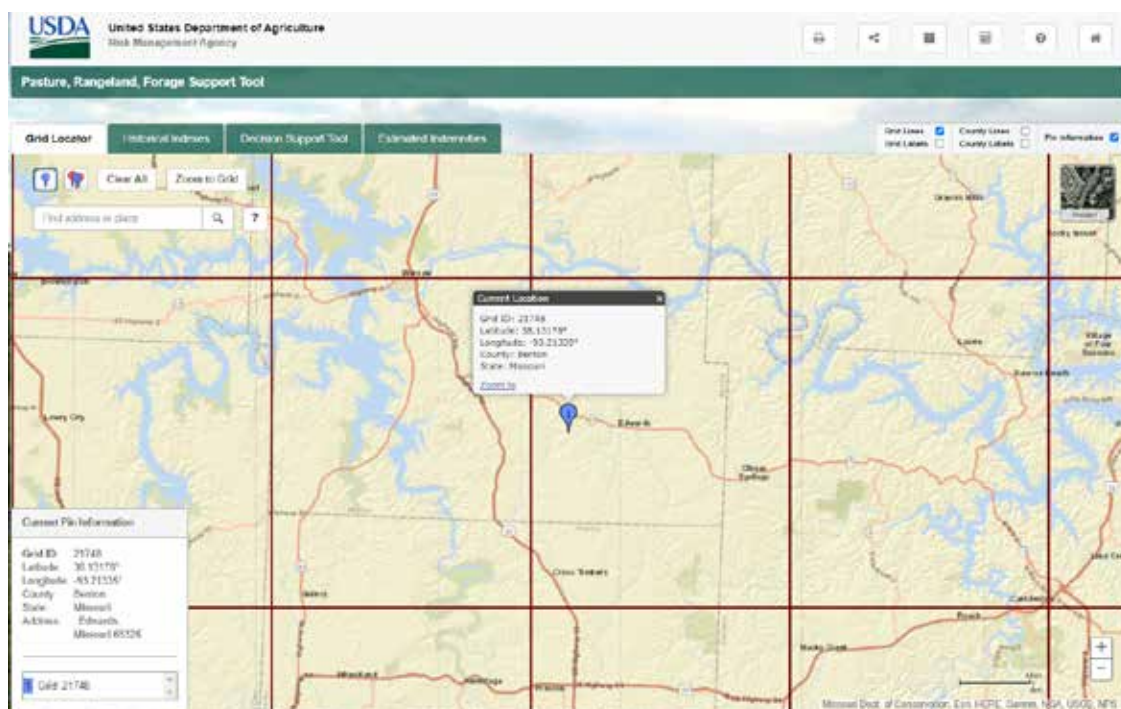
August and September

September and October

October and November

November and December

**Figure 2.** Producers must choose coverage in at least two of these two-month intervals that do not overlap.



Map data: Missouri Dept. of Conservation, Esri, HERE, Garmin, NGA, USGS, NPS.

**Figure 3.** The grid locator enables producers to identify their grid location for their insurance policy.

## Indemnity payments

An indemnity is paid when the interpolated precipitation is less than the trigger grid index, which is the specified percentage of the rainfall index. The trigger grid index is determined by the level of coverage selected (70 to 90 percent). For example, if a farmer selected 90 percent coverage, then the final grid index must be below 90 for that two-month interval to trigger an indemnity payment. Actual indemnity payments are based on the difference between the trigger index and the actual index, divided by the trigger index, and multiplied by the policy protection for the index interval.

Because this insurance does not measure, capture or use any actual crop production, a producer could experience a loss of production and not receive an indemnity payment, or could receive a payment without suffering an actual loss of production.

## Decision support tool

A [decision support tool](https://prodwebnlb.rma.usda.gov/apps/prf) (<https://prodwebnlb.rma.usda.gov/apps/prf>) is available to look at historical PRF policy information (Figure 4). Producers can select a grid location, enter their coverage and view the protection level, premiums, subsidies, index value and indemnities would have been for any historical year. Entering policy selections into this tool is a great way to analyze PRF and how it would have performed in past years.

## Haying example

A producer located in Livingston County, Missouri, has a high-quality hay crop. The field had a grid location number of 23846. The intended use of the land was non-irrigated and non-organic hay production, and the producer elected the 90 percent coverage level and 150 percent productivity factor for this land. The producer opted to use the March–April and May–June index intervals at 50 percent and 50 percent, respectively.

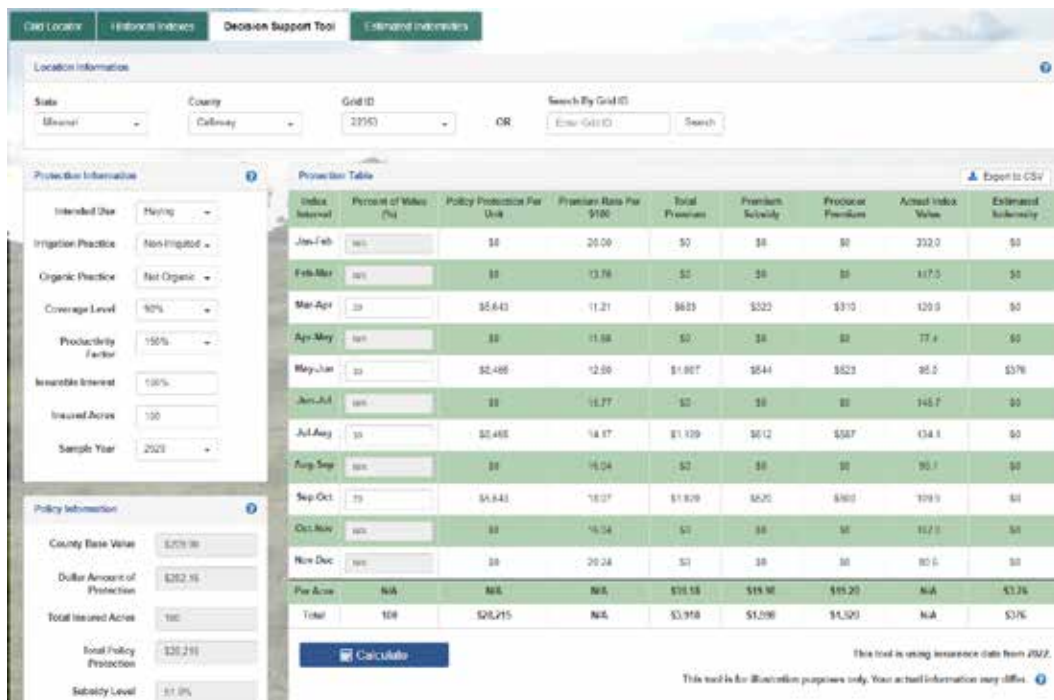
Table 2 indicates what the results of this scenario would have been in 2018 — a major drought year. Each index interval resulted in indemnities as they were below the trigger grid index of 90. The producer would have paid premiums of \$23.34 per acre and received indemnity payments of \$154.83 per acre.

**Table 2. PRF insurance, haying example, per acre.**

Index interval	Percent of value	Producer premium	Index value	Indemnity per acre
March–April	50	\$11.87	38.5	\$102.36
May–June	50	\$11.47	63.6	\$52.47
Total	100	\$23.34	NA	\$154.83

## Grazing example

The same producer located in Livingston County, Missouri, grid location number 23846, insured grazing pasture. The producer elected the 90 percent coverage level and 150 percent productivity factor for this land.



**Figure 4.** Producers can use the decision support tool to analyze how PRF insurance would have performed in past years.

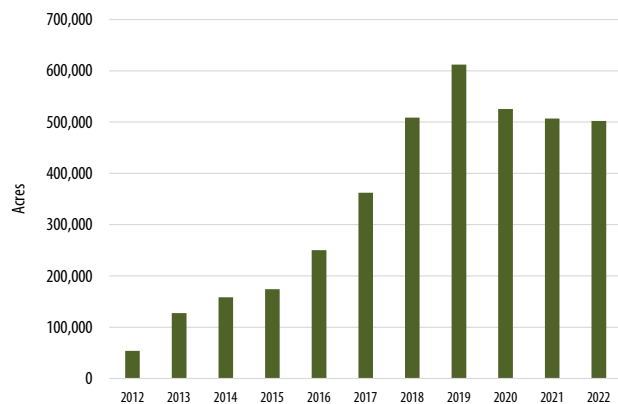
**Table 3. PRF insurance, grazing example, per acre.**

Index interval	Percent of value	Producer premium	Index value	Indemnity per acre
March–April	50	\$2.67	38.5	\$23.02
May–June	50	\$2.58	63.6	\$11.80
Total	100	\$5.25	NA	\$34.82

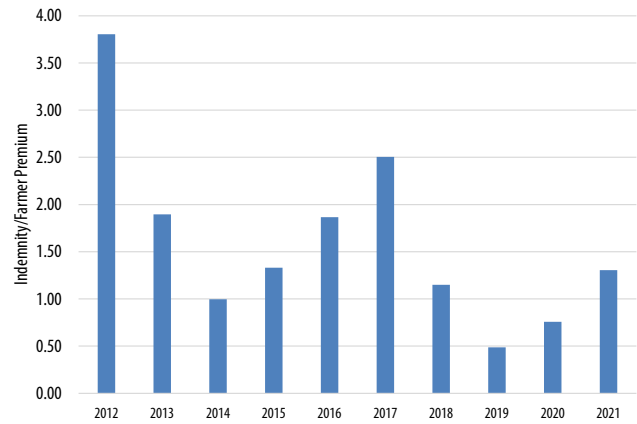
The producer opted to use the March–April and May–June intervals at 50 percent and 50 percent, respectively. Table 3 indicates what the results of this scenario would have been in 2018. The producer would have paid premiums of \$5.25 per acre and received indemnity payments of \$34.82 per acre.

### History of PRF insurance in Missouri

Missouri is a significant forage-production state. In Missouri, about 6.9 million acres are in permanent pasture and 3.1 million acres of hay are harvested annually. Historical use of PRF insurance in Missouri can be found in Figure 5 from USDA RMA.



**Figure 5.** Missouri acreage covered by PRF insurance.



**Figure 6.** Farmer premium loss ratio for Missouri PRF insurance.

To show past levels of PRF insurance payments to Missouri farmers, Figure 6 identifies the Missouri farmer premium loss ratio for the years 2012 to 2021. A farmer premium loss ratio can be defined as the indemnities that were paid out to farmers divided by the actual premiums paid by farmers. In 2021, PRF insurance resulted in a farmer premium loss ratio of 1.3. This means a farmer premium of \$1.00 resulted in \$1.30 in indemnities when averaged across the state.

### For more information

For more information about this insurance plan, contact a [crop insurance agent](https://rma.usda.gov/informationtools/agentlocator) (rma.usda.gov/informationtools/agentlocator). Crop insurance agents are the best sources of information about these policies and can help you understand how the policies could be customized for your farm.