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Insurance option protects pastures, forage against drought

Dry conditions and drought returned this year for many livestock producers in Wyoming and across the west.

Conditions have made planning and accounting for the associated risk a much more important management consideration. One option for managing some of that risk is Rainfall Index - Pasture, Rangeland, and Forage (RI-PRF) insurance.

RI-PRF covers losses associated with lack of precipitation. RI-PRF uses a 17 x 17-mile grid area and NOAA weather data to determine the rainfall index for each grid area. Policies use a two-month index interval, with provisions to cover up to 70 percent of the total in any one interval period (insured index periods cannot be consecutive).

RI-PRF policies do not provide coverage for individual locations. The index is determined for an entire grid area. Producers can choose up to 90-percent coverage and set a productivity factor between 60 and 150 percent of the county base value. Indemnities are paid when the rainfall index drops below the coverage level.

Evaluating RI-PRF: Goshen County Example

Assume a Goshen County producer in Grid ID 26204 has 2,000 acres of pasture to insure (see the grid locator/decision tool at rma.usda.gov). Assume they select to cover 70 percent of production in the April-May period and 30 percent for the June-July period. In addition, they choose 90 percent coverage and a 150 percent productivity factor.

Using the decision support tool and 2016 data (the most recent available), we can plot which interval periods would have paid indemnities; in this particular example, the index value was 38.1 in the June-July interval, resulting in an indemnity of $2.92/acre or $5,839 total. The April-May interval index value was 132.4 and did not qualify for an indemnity.

By selecting the estimated indemnities tab, users can compare their own historical data against how the policy would have potentially paid indemnities for a given year for the selected time periods.

There are important points to remember when considering RI-PRF coverage. Most important is the policy provides protection against decreased precipitation for specific time periods within a specific grid area. Rainfall at a specific location within a grid may not match the index interval for the entire grid area. This may result in an indemnity payment even though a specific location did not experience a significant production loss. RI-PRF is best considered as part of a long-term drought risk management strategy.

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Protection Information

Intended Use	Grazing
Irrigation Practice	Please Select
Organic Practice	Please Select
Coverage Level	90%
Productivity Factor	150%
Insurable Interest	100%
Insured Acres	2000
Sample Year	2016

Policy Information

County Base Value	$12.50
Dollar Amount of Protection	$16.88
Total Insured Acres	2,000

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	19.84	$0	$0	$0	72.5	$0
Feb-Mar	N/A	$0	22.94	$0	$0	$0	221.9	$0
Mar-Apr	N/A	$0	15.40	$0	$0	$0	216.4	$0
Apr-May	70	$23,625	14.47	$3,419	$1,743	$1,676	132.4	$0
May-Jun	N/A	$0	16.37	$0	$0	$0	64.4	$0
Jun-Jul	30	$10,125	13.11	$1,327	$677	$650	38.1	$5,839
Jul-Aug	N/A	$0	15.19	$0	$0	$0	92.4	$0
Aug-Sep	N/A	$0	18.91	$0	$0	$0	108.3	$0
Sep-Oct	N/A	$0	22.18	$0	$0	$0	52.2	$0
Oct-Nov	N/A	$0	20.82	$0	$0	$0	36.6	$0
Nov-Dec	N/A	$0	25.74	$0	$0	$0	72.4	$0
Per Acre	N/A	N/A	N/A	$2.37	$1.21	$1.16	N/A	$2.92
Total	2,000	$33,750	N/A	$4,746	$2,420	$2,326	N/A	$5,839

Figure 1. Decision Support Tool Data for Goshen County Example

Risk Scenario Planning

- The RSP spreadsheet-based tool allows users to account for uncertain variables in budget projections and more closely evaluate potential decisions (like purchasing RI-PRF coverage).
- The RSP tool includes preloaded examples and a detailed user guide.
- RSP is available at RightRisk.org; just select Risk Management Tools under the Resources tab.

For more information

Contact your local crop insurance agent or visit rma.usda.gov for more information about RI-PRF and how it may work with your operation. RightRisk.org is a risk management resource for producers. The Risk Scenario Planner is just one of many useful risk management tools at RightRisk.org, in addition to online courses, producer profiles, and other helpful risk management resources.

Rainfall Index – Pasture, Rangeland, and Forage Insurance (RI-PRF)

- Sign-up deadline: November 15
- Visit the RI-PRF web page: prodwebnlb.rma.usda.gov/apps/prf#
- Select the grid locator/decision tool from the menu to view historical data for your area

Soil compaction can reduce crop yields by up to 50 percent

Restricting traffic and reducing axle loads and contact pressure will help address the physical causes of compaction.

However, increasing the amount and duration of living roots, and reducing tillage will make soil more resistant to compaction and more resilient.

A healthy silt loam soil is about half empty space (pores). Those pores are filled with water and air necessary for healthy plant growth. Compacted soils have less pore space, higher bulk density (as measured by weight per volume), hold less air and water, restrict root growth, and limit nutrient availability.

Compacted soils have higher “soil strength,” which means plant roots must work harder to penetrate the soil, and rooting depth is limited. Poorly aerated soils with reduced pore space often show nutrient deficiencies not evident in healthier soils. Other crop effects include low germination rates and slow emergence.

Comprehensive analysis of 20 soil compaction experiments found topsoil compaction is a result of ground contact pressure, while subsoil compaction can be predicted by axle width and is not affected by ground contact pressure. While topsoil and upper subsoil compaction can be corrected over time, lower subsoil compaction is more permanent and should be avoided at all costs. Soil compaction caused by wagons on the Oregon Trail is still visible and measurable over 100 years later.

Axle Loads Over 10 Tons Always Compact Subsoils

Experiments have shown axle loads over 10 tons nearly always cause subsoil compaction in moist soil, while axle loads under 5 tons rarely cause subsoil compaction. Calculate the average axle load by dividing the total weight of the equipment (fully loaded) by the number of axles. Consider that the weight may not be evenly distributed, so weight on some axles may be considerably higher than the average.

Contact pressure is the pressure exerted by the tires or tracks on the surface of the soil. This has the greatest impact on topsoil compaction. Contact pressure can be determined by dividing the load per wheel by the area of each tire or track in contact with the soil. Most farm tires will have a surface contact pressure 1–2 psi higher than the inflation pressure. Are tracks better than dual tires? That depends on tire inflation.

In tilled soils, 70–80 percent of compaction occurs in the first pass across the field. Restricting traffic to specific paths can help limit compaction damage to a smaller part of the field. This can be especially effective when filling grain and beet trucks. Increasing travel speeds can also reduce compaction since compaction is a factor of total time on the soil as well as weight.

Biology Also Causes Compaction

Soil compaction is not only a mechanical issue but also a biological one. Actively growing roots in the soil secrete sugars and other “glues” that help hold soil aggregates together and increase soil organic matter. Soil mycorrhizal fungi form beneficial associations with plant roots and secrete a substance called glomalin, one of the most important soil stabilizers. Mycorrhizae do not thrive in disturbed soils.

Soils low in organic matter are more vulnerable to compaction because they have fewer, larger aggregates and are less “spongy.” By some estimates, tillage has reduced soil organic matter by 60 percent over the last 100 years. Active roots in the soil produce the sugars and glues that help hold soil particles together and help build soil organic matter (carbon). Tillage physically breaks up soil aggregates, exposes soil organic matter to rapid decomposition and loss, and discourages beneficial soil fungi.

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