

MMM 454

October 10, 2007

GRP Vegetation Index Insurance for Pasture and Forage Production is Available in South Carolina as a Pilot Program

Todd D. Davis
Extension Economist

The USDA Risk Management Agency has two insurance products to help South Carolina livestock producers manage risk in their hay and pasture production. These products are called *GRP Rainfall Index* and *GRP Vegetation Index* insurance. This memo describes the GRP Vegetation Index insurance product while the GRP Rainfall Index insurance product is described in *MMM 454*. These new insurance products are being tested in limited regions throughout the United States. GRP Vegetation Index insurance is currently available to producers in Allendale, Bamberg, Beaufort, Berkeley, Charleston, Colleton, Dillon, Dorchester, Florence, Georgetown, Hampton, Horry, Jasper, Marion, Orangeburg, and Williamsburg counties. Future expansion will depend on the success of the pilot program and will be decided by the Federal Crop Insurance Corporation (FCIC).

Product Overview

The GRP Vegetation Index insurance provides risk coverage in a group risk plan. This means that the insurance coverage is for an area and not at an individual producer's level. The insured area for the GRP Vegetation Index is a 4.8 mile by 4.8 mile grid. This grid is not necessarily confined to an individual county and may cross county lines. This insurance product only provides risk protection from drought and does not cover other production loss due to pests or disease.

The growing season for GRP Vegetation Index insurance is divided into four, three-month intervals from April 1, 2008 to March 31, 2009 (Table 1). These intervals can be thought of as mini-insurance periods where producers can choose to purchase insurance coverage for specific intervals and do not have to insure the entire growing season. Indemnities are calculated for each insurance interval and do not depend on the results from previous insurance intervals. In this way, producers can insure the production intervals where risk protection is needed most. Producers may choose to purchase insurance coverage for only one insurance interval. In addition, producers do not have to insure 100% of their acreage with this product.

Table 1. GRP Vegetation Index Insurance Intervals for the 2008-2009 Growing Season.

Insurance Interval	Dates
1	April 1 – June 30
2	July 1 – September 30
3	October 1 – December 31
4	January 1 – March 31

Indemnities for GRP Vegetation Index insurance are based on deviations from a measure of “normal greenness”. This “normal greenness” is determined by a Normal Difference Vegetation Index (NDVI).

Satellite imagery and temperature data from 1989 to 2006 are used to develop the NDVI. The satellite imagery is able to measure the productivity of hay and pasture based on the amount of “greenness.” In addition, temperature data are used to adjust the NDVI for extreme heat or cold conditions which suppress growth even if the forage is green. Once the index is developed, reduced production is measured by the deviations from this NDVI measure of “normal greenness”.

How GRP Vegetation Index Insurance Works

GRP Vegetation Index insurance provides a Dollar Amount of Protection (DAP) for each insured acre. This Dollar Amount of Protection is calculated as:

$$(1) \text{ Dollar Amount of Protection} = \text{County Base Value (CBV)} \times \text{Productivity Factor (PF)} \times \text{Coverage Level (CL)}$$

The County Base Value is the dollar value of hay production or grazing in a specific county. This value is set by FCIC and is an average value. However, an individual producer can adjust the insured value by using a Productivity Factor (PF). The Productivity Factor can range from 60% to 150% of the County Base Value and is used to adjust the dollar value to reflect the actual productivity of the insured acreage. However, only one Productivity Factor can be used for each county and each crop type.

Producers can choose to insure at the 90, 85, 80, 75 and 70 percent Coverage Levels. The insurance premiums increase with the level of coverage. There is no catastrophic insurance coverage available with this product. However, producers are still eligible for NAP coverage.

For example, consider a producer with a County Base Value for hay at \$148 with a Productivity Factor of 120% who is choosing to purchase insurance at the 85% Coverage Level. The Dollar Amount of Protection of GRP Vegetation Index insurance is calculated as $\$148 \text{ (CBV)} \times 120\% \text{ (PF)} \times 85\% \text{ (CL)} = \150.96 per acre.

The Policy Protection per Unit (PPU) is the Dollar Amount of Protection multiplied by the Number of Acres and the Producer’s Share. Consider a producer purchasing GRP Vegetation Index insurance for Interval 2 and Interval 3 for 50 acres where the producer has a 100% share of the risk. This individual has a Policy Protection per Unit of $\$150.96 \text{ (DAP)} \times 50 \text{ acres} \times 100\% \text{ share} = \$7,548$ for each interval insured. Therefore, the Total Policy Protection for this example is $\$7,548 \text{ (PPU for Interval 2)} + \$7,548 \text{ (PPU for Interval 3)} = \$15,096$.

Indemnity Calculation

An indemnity is paid whenever the Final Vegetation Index for the interval is less than the insured Coverage Level (called the Trigger Index). For example, a producer insuring at the 85% Coverage Level would receive an indemnity when the Final Index is less than the Trigger Index of 85. Using the previous example, assume the Final Index for Interval 2 is 90. There would not be an indemnity since 90 is greater than 85.

Continuing the example, assume the Final Index for Interval 3 is 60. An indemnity would be paid as 60 is less than the Trigger Index of 85. The indemnity rate is calculated as:

$$\text{Indemnity Rate} = [\text{Trigger Index} - \text{Final Index}] / \text{Trigger Index}$$

$$\text{Indemnity Rate} = [85 - 60] / 85 = 25 / 85 = 0.294.$$

The indemnity paid is the Indemnity Rate multiplied by the Policy Protection per Unit. The indemnity for this example is $\$7,548 \times 0.294 = \$2,220$.

Final Thoughts

Remember that this insurance is a group risk plan and does not provide risk protection for individual losses. Indemnities are based on vegetation conditions for a grid and may not provide an indemnity in all cases where an individual experiences a production loss.

However, this product does provide a way to increase protection above the NAP Coverage Level. Another benefit is that the insurance premiums are subsidized. The subsidy percentage is 64 percent of the premium at the lowest Coverage Level decreasing to 55 percent for the highest Coverage Level (Table 2). At the lowest Coverage level, a producer pays only 36% of the insurance premium.

Table 2. Percentage of GRP Vegetation Index Insurance Premium Paid by Subsidy and Producer Contribution for Each Coverage Level.

Coverage Level	Subsidy %	Producer Contribution %
90%	55%	45%
85%	59%	41%
80%	59%	41%
75%	64%	36%
70%	64%	36%

There is a decision tool available on the internet to help you evaluate the potential benefits and costs of insuring your acreage. By evaluating the insurance product over several years, you can understand the effectiveness of GRP Vegetation Index insurance in mitigating production risk. The decision tool can be found at: <http://agforceusa.com/rma/vi/prf/dst>.

The sales closing date is November 30, 2007. See your local insurance agent for more information.