In this tutorial you will learn how to interpret the three Grass-Cast maps.

Grass-Cast offers a forecast of how well grassland vegetation is expected to grow over the entire growing season, or how many pounds per acre you would expect to find if you went out and clipped it at its peak biomass. Grass-Cast combines almost 40 years of historical weather and vegetation clippings data with seasonal precipitation forecasts for the upcoming growing season. With Grass-Cast, users can zoom in on an area that's roughly 6 by 6 square miles in size to see if it is likely to produce higher, lower, or normal amounts of vegetation compared to its 38-year average.

Let's walk through an example using maps that were made on April 2, 2019. We want to find the possible scenarios for a grassland area in northeast Colorado, which happens to be where the Northern Plains Climate Hub calls home. This area is outlined in black on all three maps. The map on the left shows how many pounds per acre could be expected to grow compared to the area's 38-year historic average if precipitation totals are above normal from April through the end of August. Notice the medium-blue coloring in that area and look at the legend on the left-hand side. It tells us that, if precipitation in this area is above-normal for the rest of the growing season, you could expect 15 to 30% more pounds per acre than the area's 38-year average.

What if precipitation over the rest of the growing season is near-normal? Then look at the middle map, which shows the same location, but shaded a different color than it was in the previous map. Now the area is shaded green, which the legend tells us means that you could expect anywhere from 5% less to 5% more pounds per acre this season, or near-average amounts of grass.

Lastly, what if precipitation for this area is below-normal for the rest of the growing season? Then you would look at the map on the right. On this map, the Nunn, Colorado, area is shaded yellow, meaning that you would expect 5 to 15% less pounds per acre then the area's 38-year average.

Next, you should compare the Grass-Cast maps with another source of information to find out which scenario is most likely to occur—NOAA's three-month precipitation outlook. Using the same location and timeframe as we did with the Grass-Cast maps, NOAA's outlook is leaning towards having above-normal precipitation in this area. How strongly is it leaning? There is a 54% chance of above-normal precipitation, compared to a 33% chance that near-normal precipitation could occur, or a 13% chance for below-normal precipitation. Any of these three scenarios are possible, but at the time the Grass-Cast maps were made, NOAA was leaning towards above-normal precipitation.

With that in mind, let's revisit the Grass-Cast maps and look closer at the above-normal map. This is the most likely scenario for the growing season, and it says—if the area really does get above-average precipitation from now through August—there should be 15 to 30% more pounds per acre than the area's long-term average. But remember that the second most-likely

scenario is that precipitation will be near-normal. If this happens, then there should be 5% less to 5% more forage in the area, or close-to-average pounds per acre.

Of course, as rangeland managers or ranchers, you always want to be prepared for the worst-case scenario. In this case, it was a 13% chance of having 5% to 15% percent less forage than usual. Even if things are looking positive based on the Grass-Cast maps, you should always have a drought plan in place.