NEBRASKA
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DEPARTMENT OF AGRICULTURE

ANIMAL AND PLANT HEALTH PROTECTION
PESTICIDE PROGRAM
April 2024

Using Precipitation Forecasts to Comply with Product Labels

Many pesticide product labels currently have precautionary language similar this:

> "Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours."

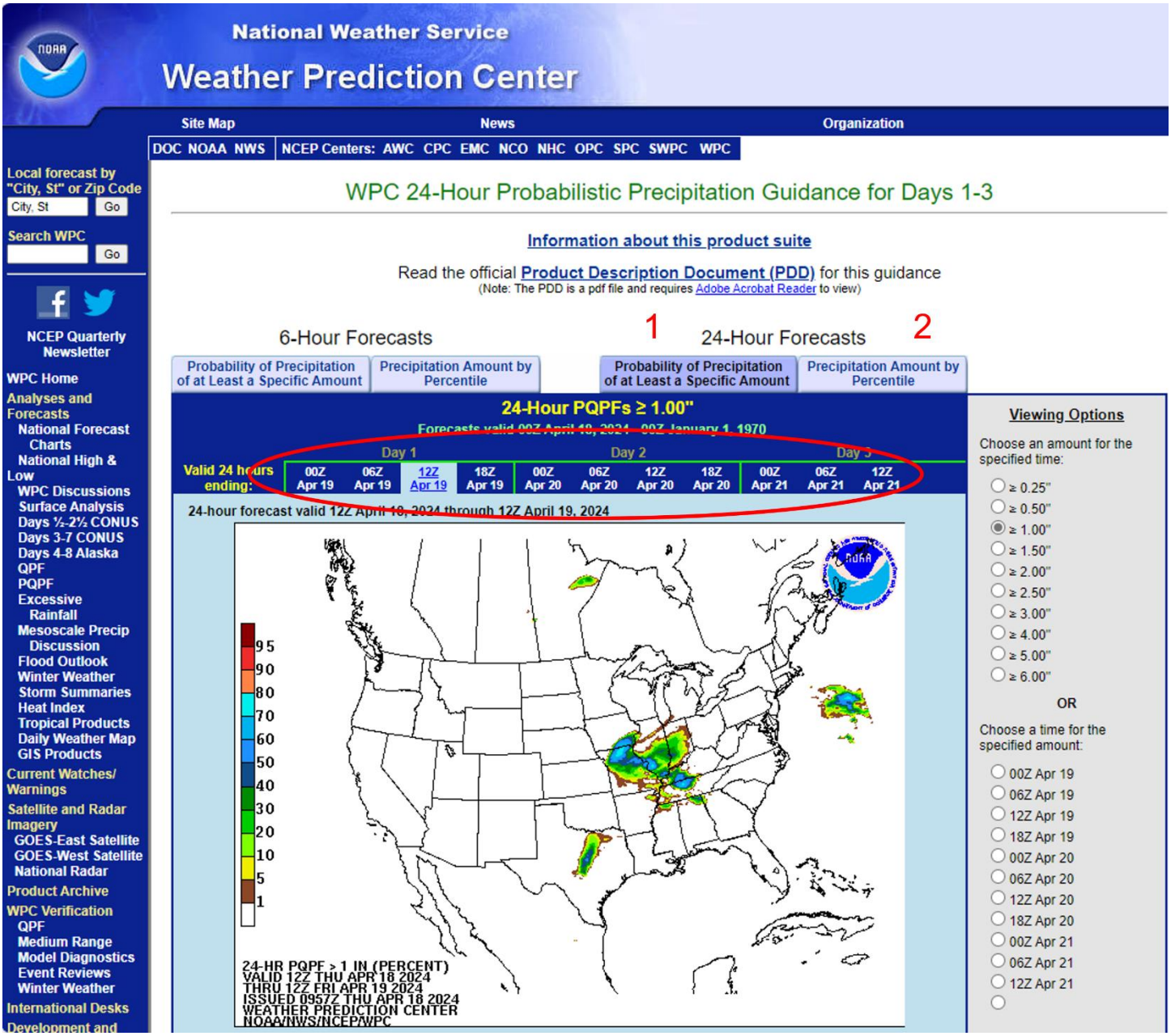
However, products may start appearing with labels having variation of this statement:

> "Do not apply when soil in the area to be treated is saturated (if there is standing water on the field or if water can be squeezed from soil) or if NOAA/National Weather Service predicts 50% chance or greater of a 1 or more inches of rainfall to occur within 48 hours following application. Detailed National Weather Service forecasts for local weather conditions may be obtained on-line at: http://www.nws.noaa.gov, on NOAA weather radio, or by contacting your local National Weather Service Forecasting Office." (underline emphasis added)

The purpose of this language is to reduce the amount of pesticides in runoff water, which impacts aquatic life downstream as well as potentially drinking water supplies. Applicators should access this tool to make informed decisions about their applications and comply with the label language. Keeping a record of this information in your files is recommended. The following demonstrates how to use this Weather Service tool.

The following link takes you to the probabilistic quantitative precipitation forecast (PQPF) of the National Weather Service's Weather Prediction Center. The PQPF forecasts provide information in several ways, but for the purpose of complying with the example label statement above, it's recommended that you view forecasts in the following two ways (described more below): The 24-hour probability or chance of precipitation exceeding a selected threshold (shown as "1" in the image below) and the 24-hour percent chance of precipitation collected up to the mapped amount ("2" in the image below).

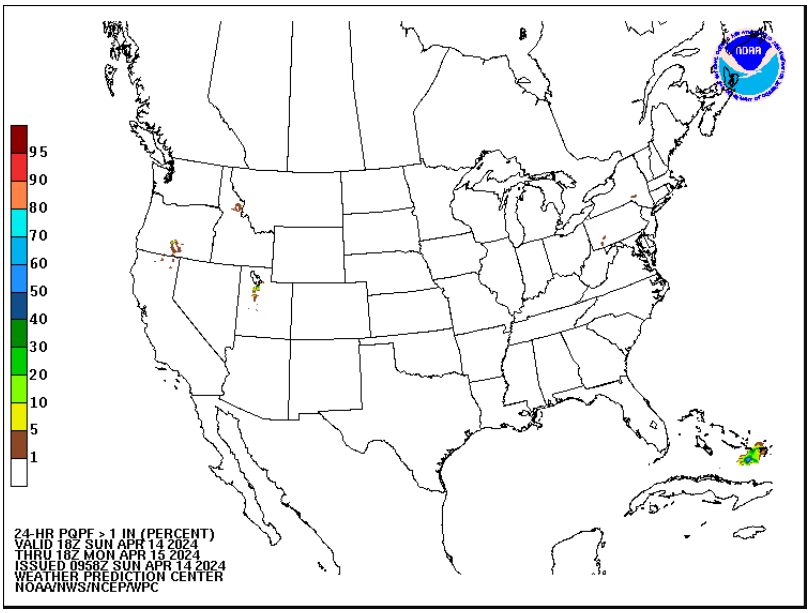
Scrolling over the 6-hour increment tabs (circled below) show you the progression of 24-hour forecasts from that time forward. Each map image is stamped in the lower lefthand corner with the forecast selections you've made.



- [WPC 24-Hour Probability of Precipitation Guidance for Days 1-3 (noaa.gov)]

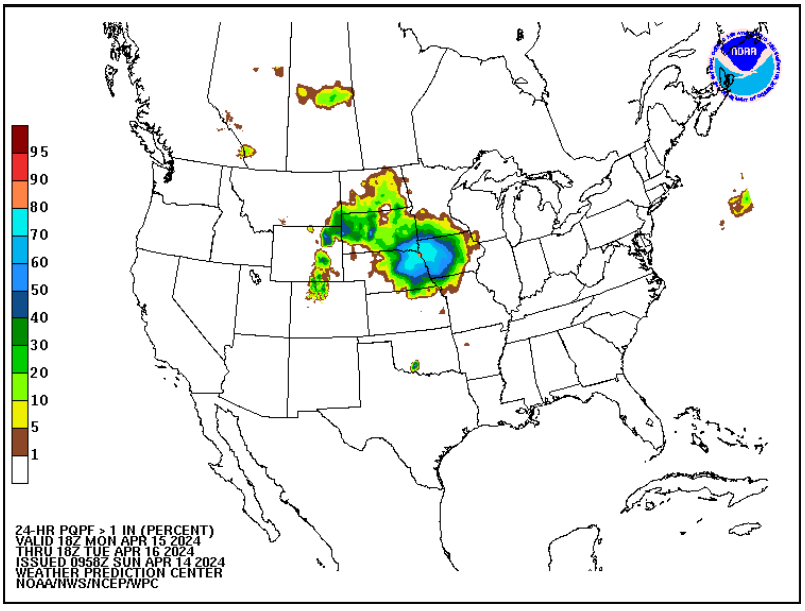
For this forecast, the probability or chance of precipitation exceeding a selected threshold is shown by color contour levels. That is, the 24-hour accumulation will be equal to or exceed the threshold you've selected. As an example, consider the 1.0 inch threshold. If a point on the map falls within the 40% contour, then the chance of precipitation exceeding 1.0 inch is 40% or greater. As the precipitation threshold value increases, the probability of exceeding it will decrease.

In the images below, the 1“ threshold was selected on Sunday April 14th, looking at the period of time between 6 pm Sunday and 6 pm Monday April 15th. There was no chance of precipitation exceeding 1 inch in the forecast for that time period. To see bigger images, you can zoom in within this file or click the link to see the archived version of each forecast image.



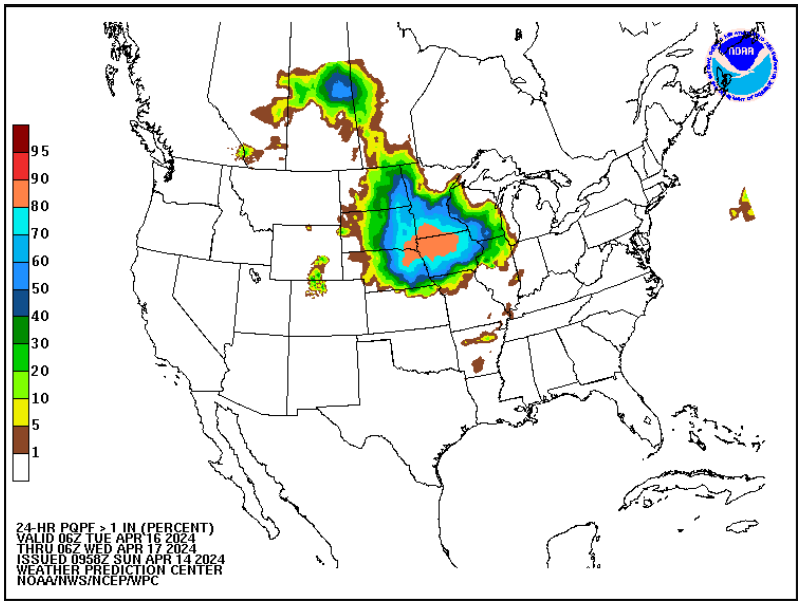
p24i_pqpf_ge100_2024041412f030.gif (748×562) (noaa.gov)

The following forecast was also obtained on Sunday the 14th but is showing the 24-hour period from 6 pm Monday the 15th through 6 pm on Tuesday the 16th. Note there is a large area of northeast Nebraska with a 50% chance or greater to get at least 1 inch of precipitation.



p24i_pqpf_ge100_2024041412f054.gif (748×562) (noaa.gov)

The following forecast extends to the next 24-hour period, which shows a similar area with 50% or greater chance of 1 inch; some areas with an 80% chance of getting at least an inch of rain over that time period.



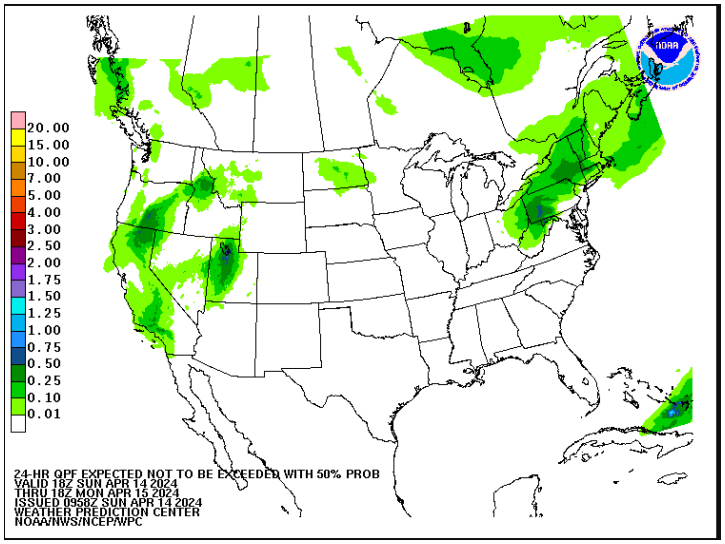
p24i_pqpf_ge100_2024041412f066.gif (748×562) (noaa.gov)

The second way to view these forecasts, the percentile map, shows levels of precipitation amounts associated with a selected percentile. This is the percent chance of precipitation accumulating up to the amount shown by the colors on the map. From the opposite perspective, 100 minus the percentile is the chance of precipitation exceeding the depicted amount. For example, there is a 25% chance of precipitation being less than the amounts shown on the 25th percentile map; while there is a 75% chance that it will exceed that amount (100% - 25% = 75%). Thus, lower values are associated with smaller precipitation amounts compared to the higher values.

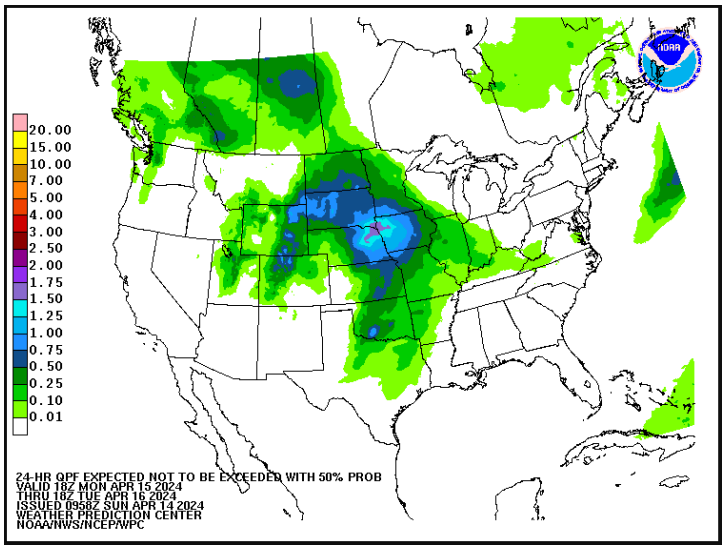
The following images correspond to the same timeframe as those above, except they show the 50% percentile maps. For any amount in the color legend, there is a 50% chance of receiving up to that amount, and a 50% chance of getting more precipitation.

Note that some areas of northeast Nebraska were predicted to get approximately 2 inches in each of the 2nd and 3rd 24-hour forecast period (2nd and 3rd maps below). A table of precipitation estimates from selected northeast Nebraska weather stations can be used for comparison. Precipitation estimates were gathered from the Automated Weather Data Network

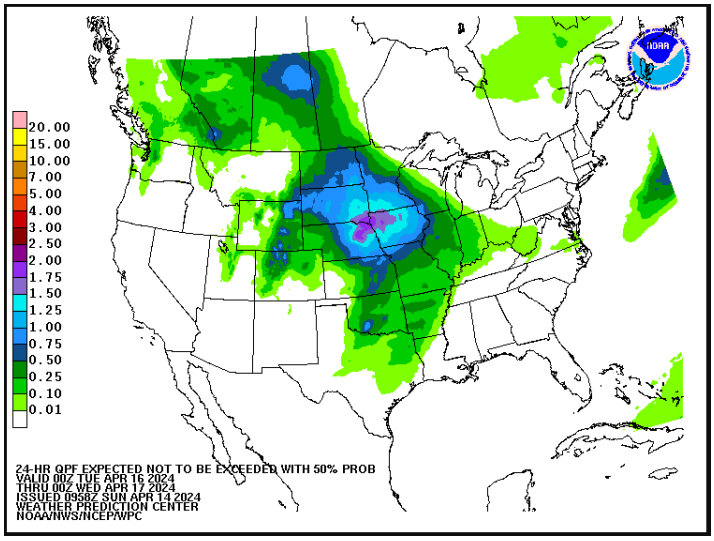
	Daily Precipitation (inches)					
	Concord 2E	Decatur 7S	Fordyce 4NW	Leigh 1W	Oakland 4W	Winslow 6E
4/14/2024	0	0	0	0	0	0
4/15/2024	0	0.14	0	0.13	0.07	0.06
4/16/2024	3.78	0.48	2.62	1.63	0.72	0.41
4/17/2024	0.2	0	0.03	0	0	0



p24i_50prcntil_2024041412f030.gif (748×562) (noaa.gov)



p24i_50prcntil_2024041412f054.gif (748×562) (noaa.gov)



p24i_50prcntil_2024041412f060.gif (748×562) (noaa.gov)

It will likely take time and practice to be able to read and understand these maps, as well as to get into the habit of checking this site well ahead of when an application is planned. However, in this time of ever-increasing scrutiny of pesticide use and potential offsite impacts to water quality and nontarget species, NDA highly recommends making this a part of your farm or business routine.