

Kansas Drought Conditions - Week 8

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Introduction

Soil moisture nearly always seems to be in short supply in some part of Kansas. This year is off to a poor soil moisture start based on the latest graphs from the U.S. Drought Monitor website. Ibendahl (<https://agmanager.info/production-economics/production-publications/kansas-wheat-yield-estimates-2023>) recently examined the prospects for wheat yields using the DSCI index from U.S. Drought Monitor. Ibendahl's model used county level drought levels to estimate a state yield of 36 bu/ac. The confidence in this estimate is low as indicated in the wide confidence intervals. Still, there is at least some evidence that wheat yields may be poor and could be very poor.

Farmers may also be wondering if the current drought situation might have some impact on corn and soybeans yields. This article briefly examines the prospects for corn and soybean yields based on the current moisture situation.

Current soil moisture in Kansas

There are at least two sources of soil moisture available for analysis. First, the USDA reports on both topsoil and subsoil conditions. Their report is the percent of farmland in the state that has surplus moisture, has adequate moisture, is short of moisture, or is very short of moisture. This data is collected weekly during the growing season starting in April. However, during the winter, the soil moisture report is less regular.

U.S. Drought Monitor also reports on soil moisture but only the deficit moisture conditions. They have weekly data going back

to 2000. Although U.S. Drought Monitor doesn't estimate surplus moisture, they do have 5 levels of drought severity (from D0 to D4). Their data is available at the county level in addition to the state level.

Figure 1 is a likert plot of the U.S. Drought Monitor soil situation for Kansas for the last 24 years. This figure represents week 8 (the end of February) for each of the years shown. Likert plots always center on one category with the other categories either above or below the centered category. In this figure, the plot is centered on category D1 and that percentage of state land is shown by the percent in the middle of the figure (8% for 2023). Categories D0 and None are to the right of the centered category and the total of these two categories is shown on the right edge of the plot (25% for 2023). Categories D2, D3, and D4 are to the left and the total of these three categories is shown on the left edge (67% for 2023).

As Figure 1 illustrates, 2023 is one of the driest years (as of the end of February) in the last 23 years. Only 2013 is drier. Being dry at the end of February is no guarantee that yields will be poor. While the estimate provided by Ibendahl indicated a poor state wheat yield there were wide confidence intervals. In 2013, for example, the state average yield was 38 bu/ac which isn't the worst state average yield over the last 23 years.

For corn and soybean production, the current moisture situation has little bearing on the final yields. A regression analysis using the DSCI index from U.S. Drought Monitor and final corn and soybean yields showed an r-

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squared on nearly zero. Thus corn and soybeans yields may be poor but they could also be average or above. It is just too soon to tell for the summer crops.

Because the soil moisture conditions are showing some ability to predict wheat yields, Ibendahl plans to provide updates as the year progresses. Starting in April, there will be soil

moisture estimates and crop conditions from the USDA. These crop condition reports will also be used to model crop yields. As Ibendahl demonstrated last year, the model forecasting ability improves as harvest comes closer.

Kansas Drought Levels as of Week 8

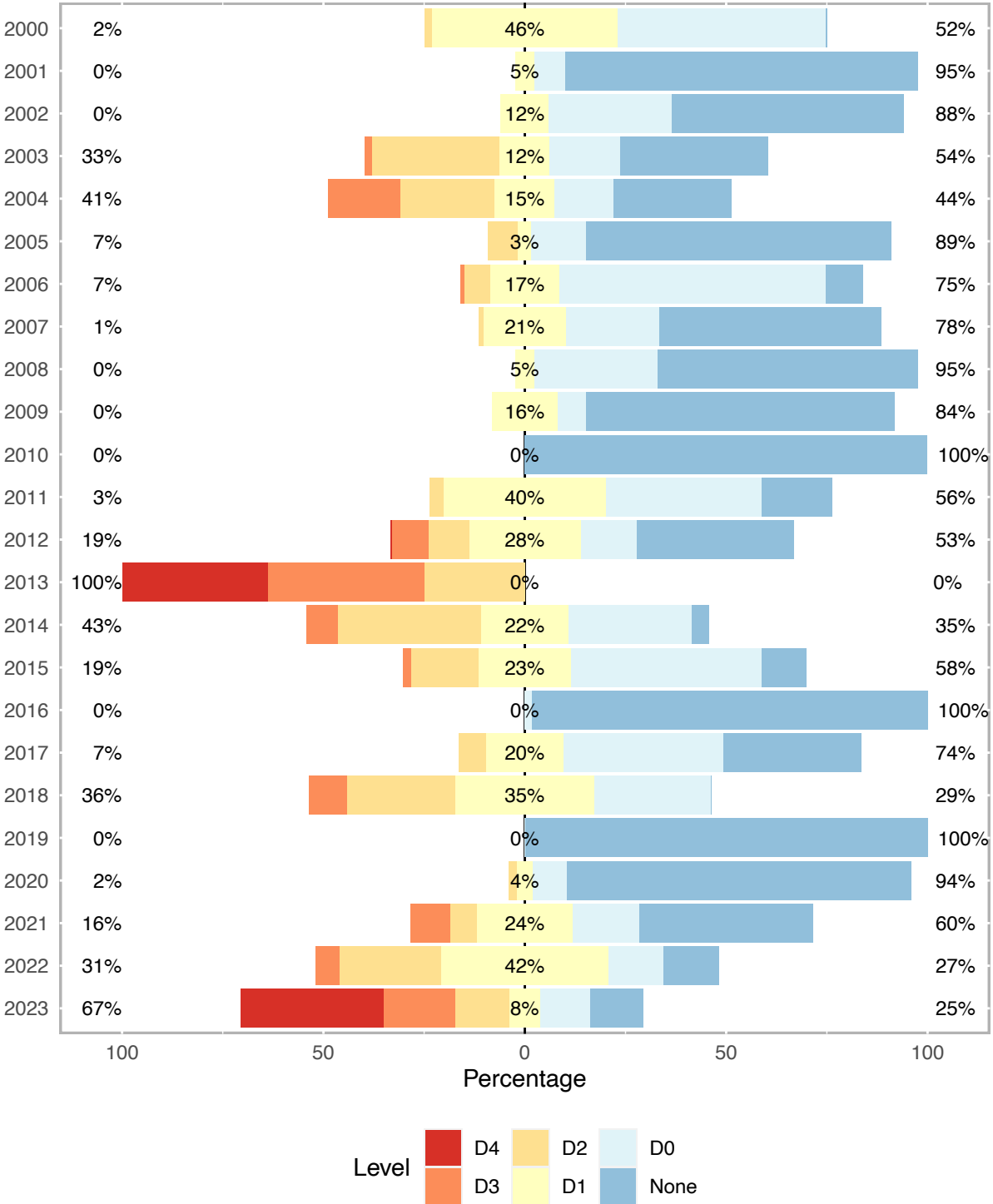


Figure 1. Likert Plot of Historical Drought Conditions for a Given Week