Kansas Wheat Yield Outlook for 2018 - April 17 Update

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http://www.agmanager.info

Introduction

In AgManager publication GI-2018.4 (https://www.agmanager.info/production-economics/production-publications/kansas-wheat-yield-outlook-2018), I estimated the 2018 Kansas wheat yield based on the crop condition reports. As of March 5, 2018, wheat in the state was rated as 15% very poor, 35% poor, 37% fair, 12% good, and 1% excellent. These crop conditions resulted in a predicted state wheat yield of 33 bushels per planted acre or 36 bushels per harvested acres. which would be 5.8 bushels below the trend line yield for the state.

As discussed in the earlier paper, early crop condition reports don't always translate to a good predictor of final crop yields. The R-squared from this earlier paper model was 0.22. This current paper re-estimates the ability to predict final wheat yields based on crop condition reports as on the middle of April.

Current Crop Conditions

As of April 15, 2018, wheat in the state was rated as 14% very poor, 32% poor, 42% fair, 11% good, and 1% excellent. These conditions are very similar to the conditions during the first week of March. The current calculated CCI score is 38.25 (note: the CCI score is explained in the earlier paper) which is only 1 point higher than early March.

Following the same modeling approach as before, the CCI indexes are used in a regression analysis to estimate the wheat yield deviation

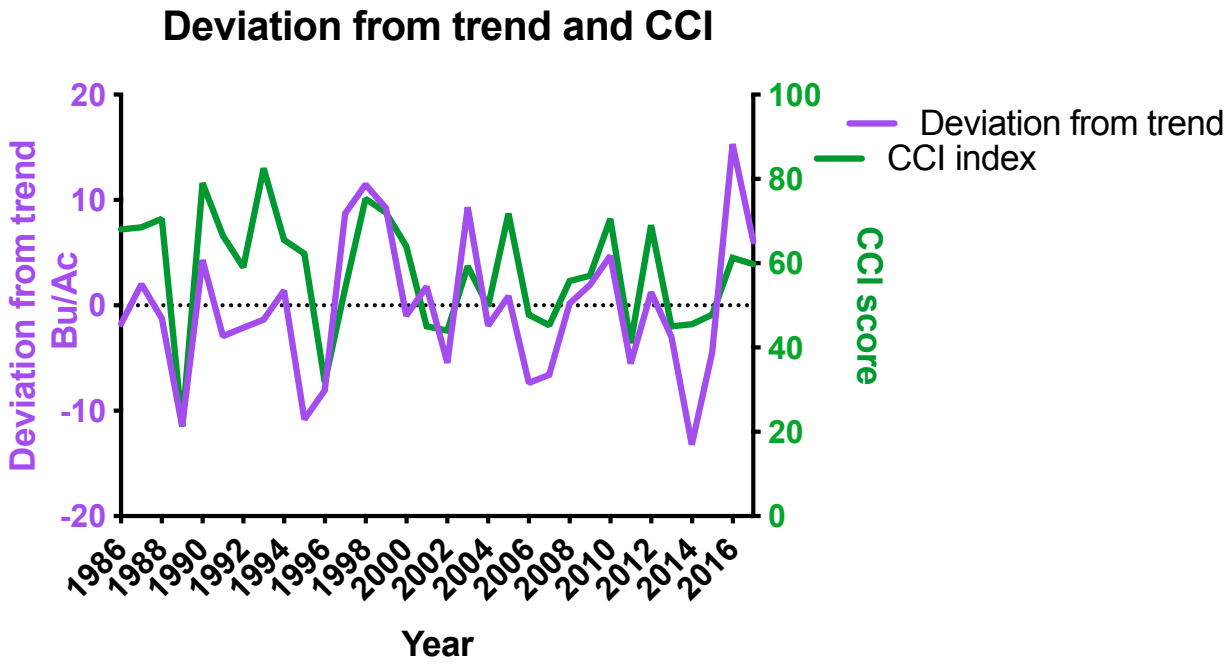

Figure 1. Comparison of wheat yield variations and CCI index scores (wk16) across time

from the yield per harvested acre. In the model, the yield deviation is a function of the CCI index. The CCI indexes are calculated from the crop reports for week 16. Week 16 ends on an April date from the 18th to the 25th depending upon the year. Figure 1 plots the deviation from the state average wheat yield per harvested acre tend line on the left axis and the CCI index on the right axis.

Results

Regression results show that the CCI index can predict the wheat yield with an R-squared value of 0.31. This is a 50% improvement from the earlier model. However, an R-squared of 0.31 still allows for a large degree of variability for predicting final wheat yields. The estimated yield equation is:

*Yield deviation = 0.269 * CCI_score - 15.9*

Figure 2 plots the wheat yield deviation against the CCI index. As can be seen in the figure, the low R-squared value is the result of large variations in the final wheat yield for a given CCI score. In other words, the CCI index is far from a perfect indicator of final wheat yields in the state.

Figure 2 also includes the 90% prediction bands. 90% of the time a producer's yield will fall within the black dashed lines at a given CCI score. Currently (as of 4/15/18), the state wheat crop has a CCI score of 38.25 while the model is based on crop reports for next week (week 16 of the USDA crop reports).

A CCI score of 38 translates to a yield deviation of 5.7 bushels below the trend line yield of 42 bushels per harvested acre. Thus the results are identical to the earlier prediction. However, the higher R-squared value means the model has less variability in the prediction. The CCI index model will be updated in a few weeks. Accuracy should improve as harvest gets closer.

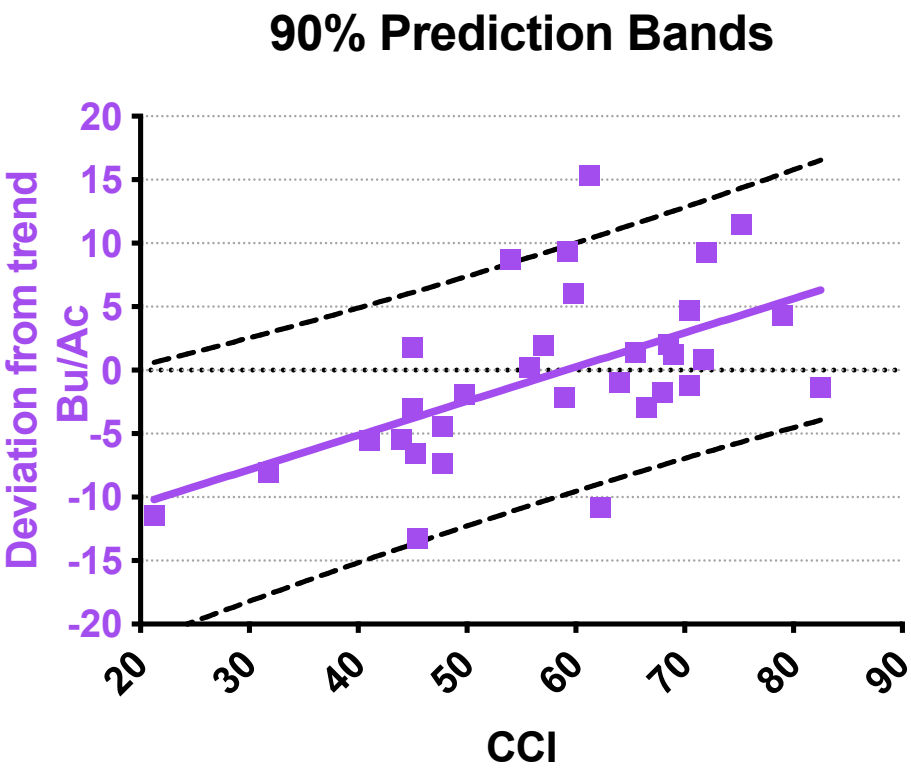

Figure 2. Expected yield deviation and the 90% confidence interval for various CCI index values