

## KFMA Relative Expenditure Indexes

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<http://www.agmanager.info>

### Background

In AgManger publication GI-2017.4, the price indexes for major expense categories was discussed so that farmers could see how expenses have changed over time. This previous publication focused solely on the USDA price index (a national price index). This USDA index puts the cost of an input on a scale relative to some base year. It is not examining how much farmers are spending on an input, only the cost of an input per unit over time.

This publication builds on AgManager publication GI-2017.4 by examining the price indexes of inputs used by farmers in Kansas. Data from expenditures of farmers in the Kansas Farm Management Association (KFMA) program was used to build the indexes shown here. Because actual expenditures are used, the results are different from those shown by the USDA. The USDA focus is on cost per unit while this study focuses on cost per category where the number of units used is allowed to vary.

In this publication, the broad expense categories of fertilizer, fuel, hired labor, machinery, and seeds are examined to see how these expenditures have changed since 1977 and 2006. To create this baselines, the expenses in the baseline year are set to 100. The percentage change in expenditures for an expense category is then computed for each year and these percentage changes are used to adjust the baseline index.

Another difference in this publication is that the KFMA expenditures were already adjusted to real dollar terms before computing the indexes. Unlike publication GI-2017.4, where the CPI index was needed to show how expenses had changed relative to inflation, the expense index lines in the figures below already reflect an inflation adjustment. Thus, any line showing above 100 is increasing faster than the inflation rate.

### Results

Results are shown for price expenditure indexes for fertilizer, fuel, labor, machinery, plus an index for total crop production expenditures per acre. Results are shown with a baseline start of 1977 and 2016 and also for eastern, western, and central parts of Kansas. The machinery expenditures used here includes management depreciation (actual decline in the market value of machinery), the interest cost of dollars invested in the machinery, repairs and maintenance, and also the fuel cost.

In eastern Kansas, nearly all expenditures have matched the inflation rate since 1977 (see Figure 1). The only exception is for seed expenses which have tripled since 1977. Contrast this to the USDA price index where machinery costs increased the most. This difference can be explained by how farmers have adjusted their machinery use. While an individual piece of machinery is certainly more expensive, size advantages, new technologies, and the use of reduced tillage have all led to the actual ma-

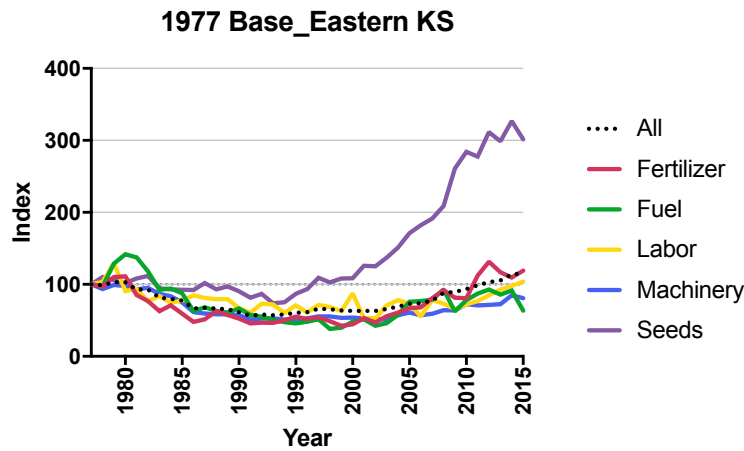


Figure 1. Index of KFMA Expenditures for Eastern Kansas Since 1977

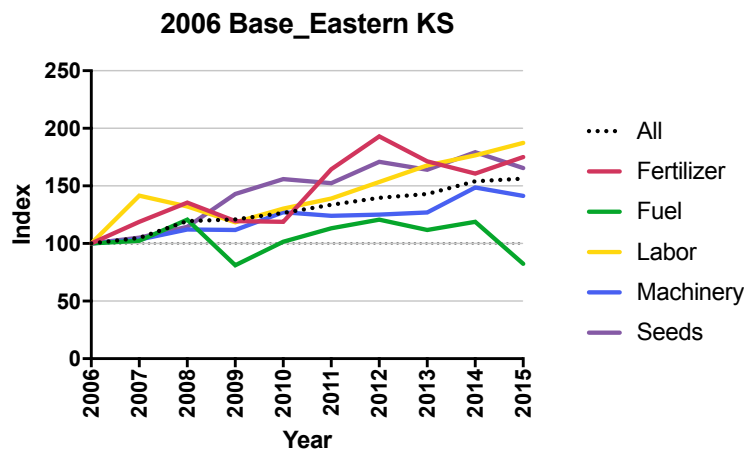


Figure 2. Index of KFMA Expenditures for Eastern Kansas Since 2006

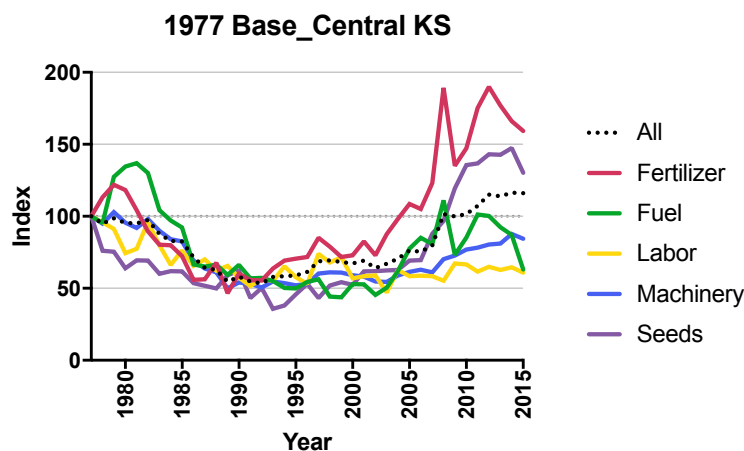


Figure 3. Index of KFMA Expenditures for Central Kansas Since 1977

chinery expenditures not changing very much over 40 years.

Figure 2 shows the expense expenditures in eastern Kansas since 2006. This figure shows that all expense categories except fuel have increased by 50%. 2006 was the start of a period of high grain prices so most likely, farmers were still profitable with these higher prices. The higher grain prices likely led to more intensive farming as well which is why the fertilizer expenditure shows the second biggest increase when the actual price for a unit of fertilizer did not increase very much. Now though, with grain prices back at low levels again, these higher expenses are affecting the profitability of many farms.

Figures 3 and 4 show the expense expenditures for central Kansas. Fertilizer use now shows the largest increase in expenditures since 1977 with seeds the second largest. Starting with a base year of 2006, seeds have been the most expensive. These two figures are likely showing how the crop mix has changed in the drier parts of the state. Higher corn prices have led to more corn acres which increased the seed and fertilizer expenses.

Another difference between eastern and central Kansas is difference in labor expenses. In eastern Kansas, labor actually saw the largest increase in expenditures since 2006 while in central Kansas the labor expenditures matched the inflation rate.

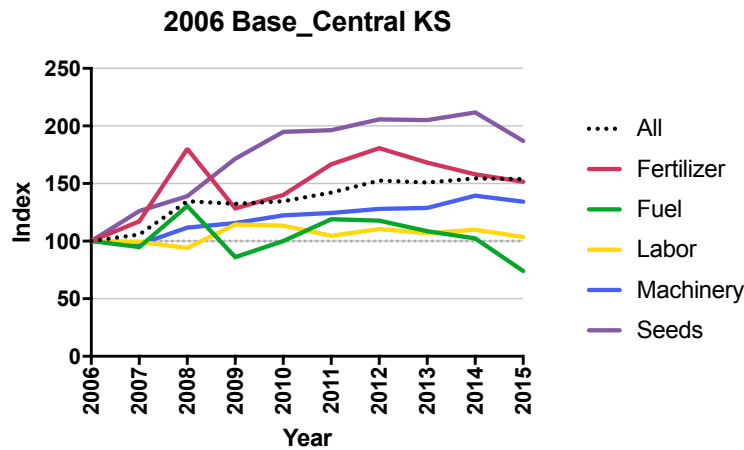


Figure 4. Index of KFMA Expenditures for Central Kansas Since 2006

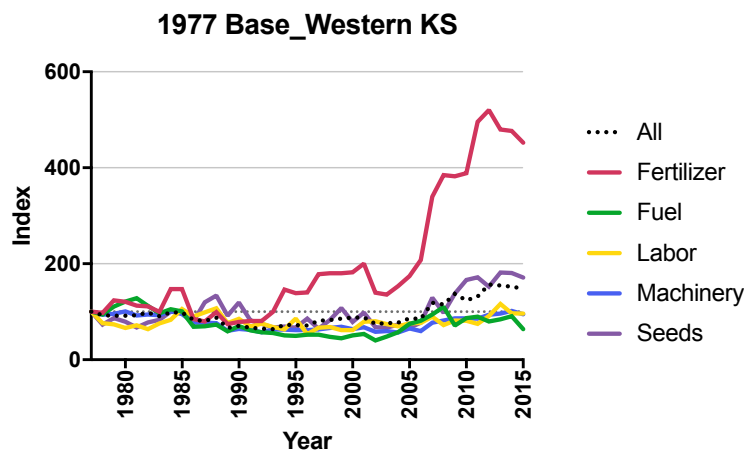


Figure 5. Index of KFMA Expenditures for Western Kansas Since 1977

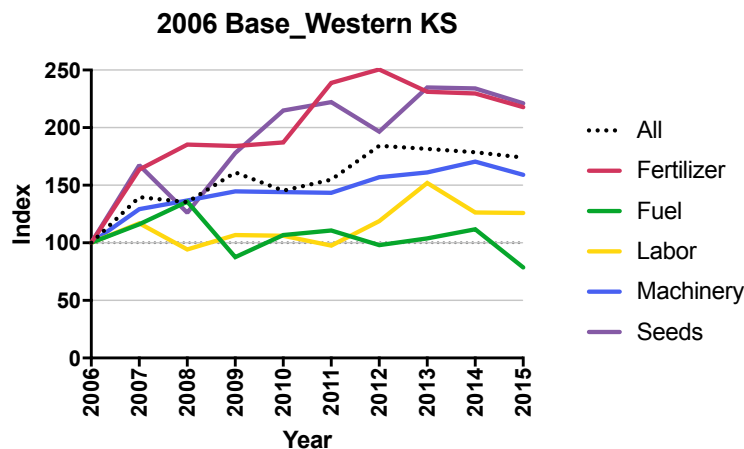


Figure 3. Index of KFMA Expenditures for Western Kansas Since 2006

Figures 5 and 6 show the expense expenditures for western Kansas. The same trends seen in central Kansas are apparent here too. Fertilizer and seed expenditures have increased the most due in part to a switch away from wheat acres and to more intensive farming.

### Discussion

As noted in the discussion of the USDA price indexes, seed costs need to be monitored especially closely. Seed expense per unit as provided by the USDA have increased the most since 2006. Seeds are also one area where it is especially difficult to adjust spending. While machinery expenses and cash outflow can be controlled to some degree by delaying equipment purchases, seeds will always be needed to grow a crop. There may be options to lower plant populations or use a lower priced seed but be sure to check with agronomists about the consequences of these types of actions.