Farm Expense Categories as a Percent of Total Farm Expenses

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Introduction[1]

An examination of the dollars spent on a particular input category can make it difficult to determine how farming practices have changed over time as well as determine how different areas of the state produce a crop. Another approach is to examine various expense categories as a percent of the total farm expense. This paper provides an analysis of the major expense categories as a percent of total farm expenses over time and for east, central, and west Kansas.

Procedure

In this analysis, Kansas Farm Management Association (KFMA) grain farms with useable farm records provide the data. Including livestock farms would add more expense categories and would distort the analysis of the existing categories. Total expenses are calculated by subtracting net farm income from the value of farm production. Accrual accounting is used to determine net farm income.

The one major difference between KFMA reported net farm income and a farmer's own income calculation is the treatment of depreciation expenses. KFMA uses economic depreciation as opposed to accounting depreciation. The economic depreciation is itself a calculation instead of an exact measure of the yearly decline in asset value. The formulas used by KFMA depreciate the asset slower than tax depreciation and is their best estimate for describing how an asset decreases in value over time.

To estimate the percentage allocation of expenses by category, the entire expense category is summed across all farms and then compared to the total farm expenses of all farms. This approach weights each farm by its size as larger farms will have a larger amount spent on each specific expense item.

The percentage of each expense category was calculated for each year from 1973 through 2023. The major categories used were: machinery, fertilizer, seed, herbicides, interest, labor, crop insurance,

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cash rent, and other. Other is just the remainder left over when subtracting the specified expenses from the total expenses. All the expense categories can be seen by examining one of the KFMA whole-farm analysis reports (*click here*).

Because expenses and their relative relationship to each other can vary, this analysis is divided into three regions across the state. The machinery expense in the first figure includes depreciation, fuel, repairs, custom hire, and an interest charge. These subcategories of machinery are shown in a second graph. The other category in the first few years of the graph includes some expenses that were likely not allocated correctly. Crop insurance is one example as it was not a specific KFMA category until 1993. Cash rent is affected by two factors; the rental rate per acre and the number of cash rented acres. It is likely the percent of farm acres cash rented has increased over time. The interest expense is also affected by two factors; the amount of farm debt and the interest rate.

Results and Discussion

Figure 1 shows the percentage of the major expense items relative to all farm expanses by region. Figure 2 breaks out machinery into its sub-classes and these machinery sub items are the percent relative to total machinery costs. Figures 3 and 4 represent the same thing shown in Figures 1 and 2 but the table shows the actual percentage instead of interpreting it from the figures. Figures 3 and 4 also start with the year 1978, when the KFMA database became a little more consistent.

Machinery is the largest expense category on most farms although it has declined over time. Even with the relative decline in machinery expense, it is still represents about 30% of farm expenses. Within the machinery component, depreciation is over 30% of this component. Thus, the using up of machinery represents 10% of total farm expenses.

As the machinery expense percentage has declined, the herbicide expense percentage has increased. This likely represents the tradeoff from moving away from mechanical weed control to chemical weed control.

Cash rent has increased as a proportion of total expense over the time frame of this paper and that represents both higher cash rental rates and a shift from share leasing to cash leasing. Seed and fertilizer have both increased as a percent of total expenses too. The higher seed percentage is part of the change in agriculture to GMO technologies that combine herbicides traits with seed traits. The increases in both seed and fertilizer can also be partially attributed to a decline in wheat acres in the state to more corn acres.

Interest expenses are now a much smaller component of total expenses. However, this can be attributed to much lower interest rates rather than a reduction in farm debt. If inflation starts to accelerate like it has the last few months, this expense could become an area of concern again.

On a regional basis, seed expense is highest in eastern Kansas and lowest in western Kansas. This difference is likely due to the mix of crop grown with a higher percent of corn acres in eastern Kansas. The biggest regional difference though is crop insurance expense. In western Kansas, this is 7% of total crop expense while the other two areas of the state have less than 4% of total expenses allocated to crop insurance.

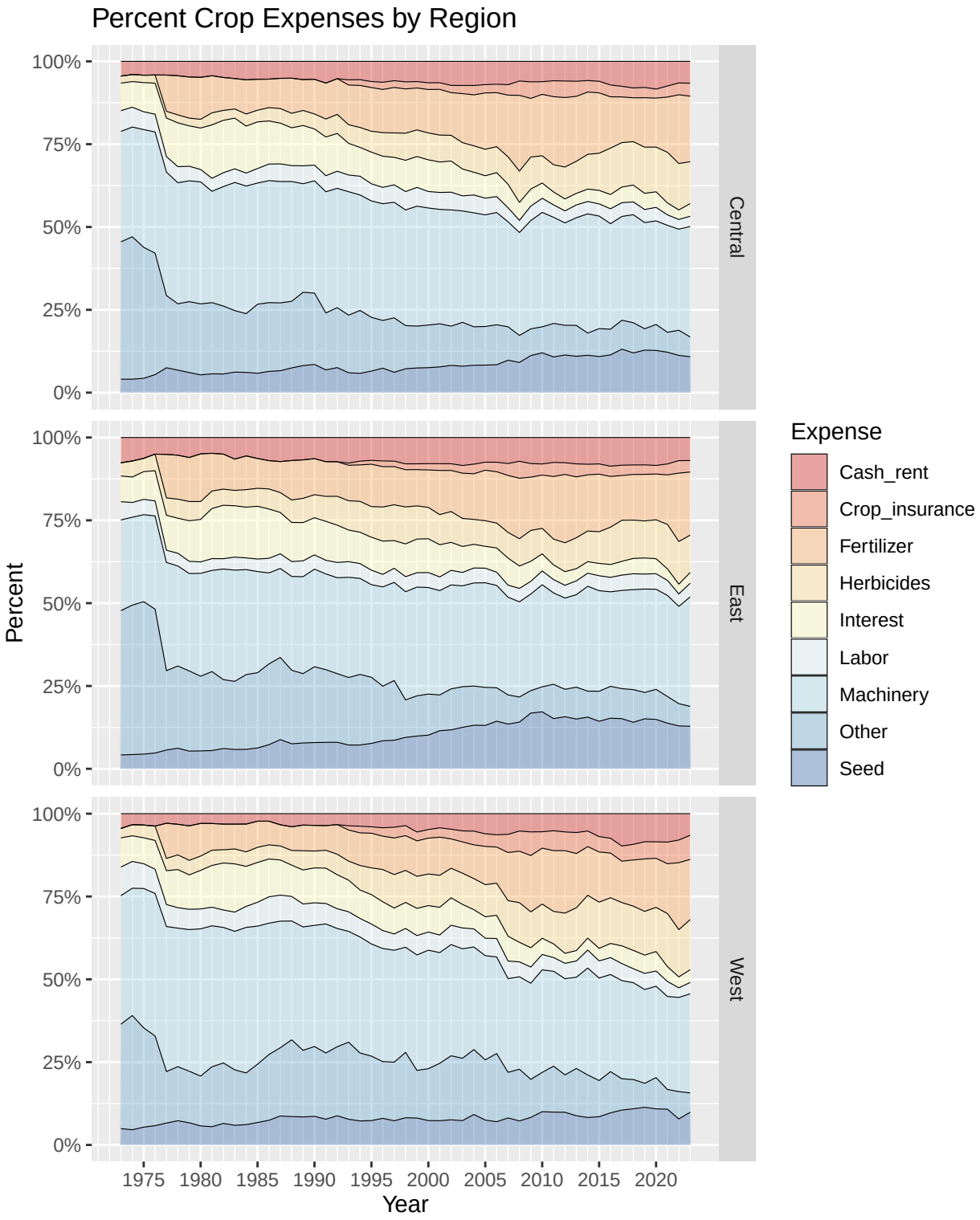

Figure 1: KFMA Farm Expenses as a Percentage of Total Expenses by Region

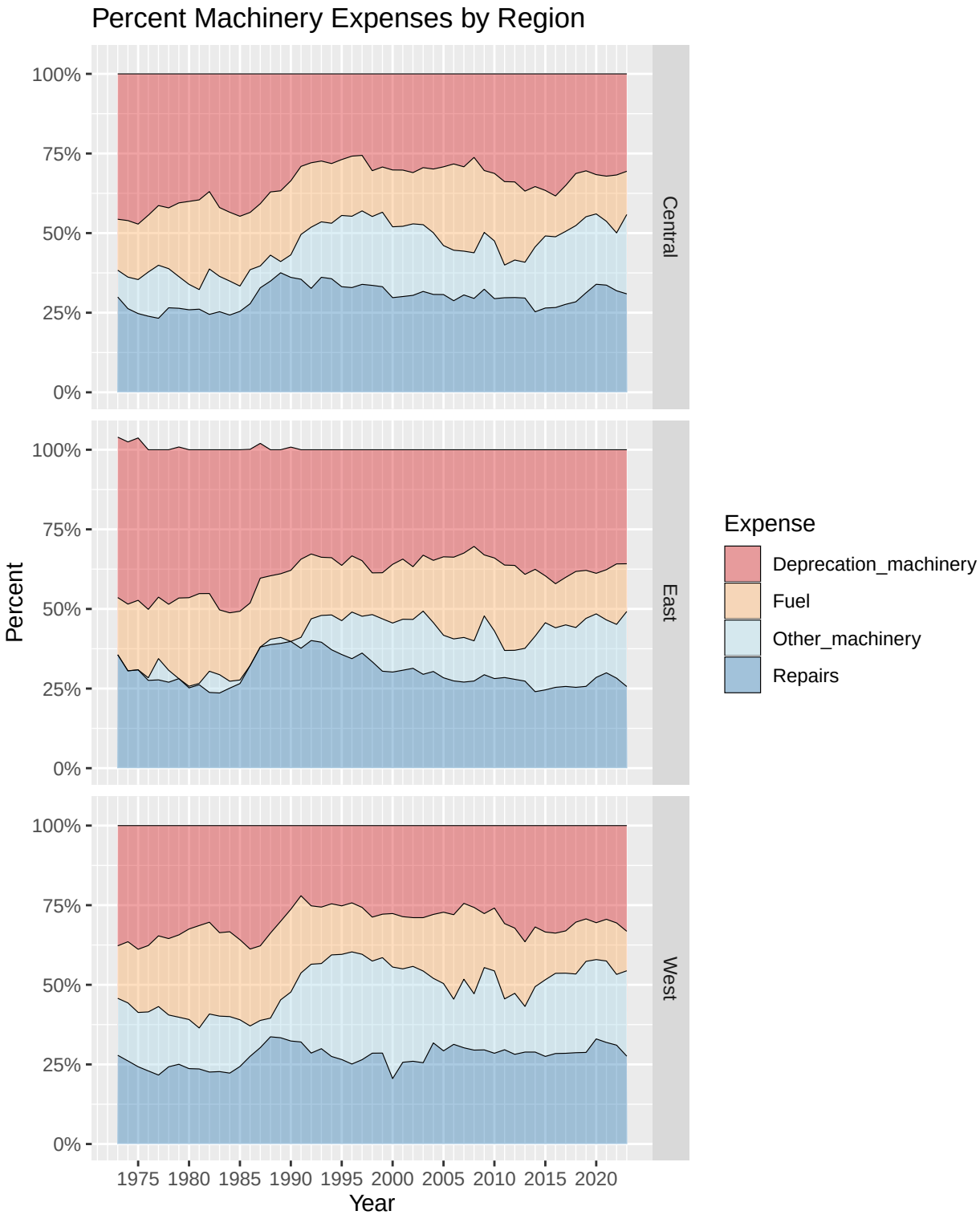

Figure 2: Components of Machinery Expenses as a Percent of Total Machinery Expense

Comparison of Major Crop Expenses by Area

Percent of Total Expenses - 1978 and 2023

Year	Machinery	Fertilizer	Seed	Labor	Herbicide	Interest	Cash rent	Crop insurance
Central								
1978	36.5%	11.8%	6.8%	4.9%	2.4%	13.2%	4.4%	0.0%
2023	33.4%	19.8%	10.8%	3.1%	12.6%	3.8%	6.6%	3.9%
East								
1978	30.2%	13.3%	6.2%	3.8%	5.7%	10.6%	5.4%	0.0%
2023	33.0%	19.0%	12.8%	4.1%	11.3%	3.3%	7.0%	3.5%
West								
1978	41.8%	9.2%	7.3%	6.2%	4.4%	11.5%	3.2%	0.0%
2023	29.9%	18.2%	9.9%	3.4%	15.1%	3.8%	6.5%	7.3%

Figure 3: Comparison of Major Crop Expenses by Area

Comparison of Machinery Expenses by Area Percent of Total Machinery Expenses - 1978 and 2023				
Year	Depreciation	Fuel	Repairs	Other
Central				
1978	42.1%	19.1%	26.5%	12.3%
2023	30.6%	13.6%	30.9%	24.9%
East				
1978	48.5%	20.7%	27.0%	3.8%
2023	35.8%	15.0%	25.6%	23.6%
West				
1978	35.5%	24.0%	24.3%	16.3%
2023	33.2%	12.4%	27.6%	26.8%

Figure 4: Comparison Gregg of Ibendahl Machinery Expenses by Area