



Fertilizer Use and Crop Yields



How Much Fertilizer Should Farmers Use?

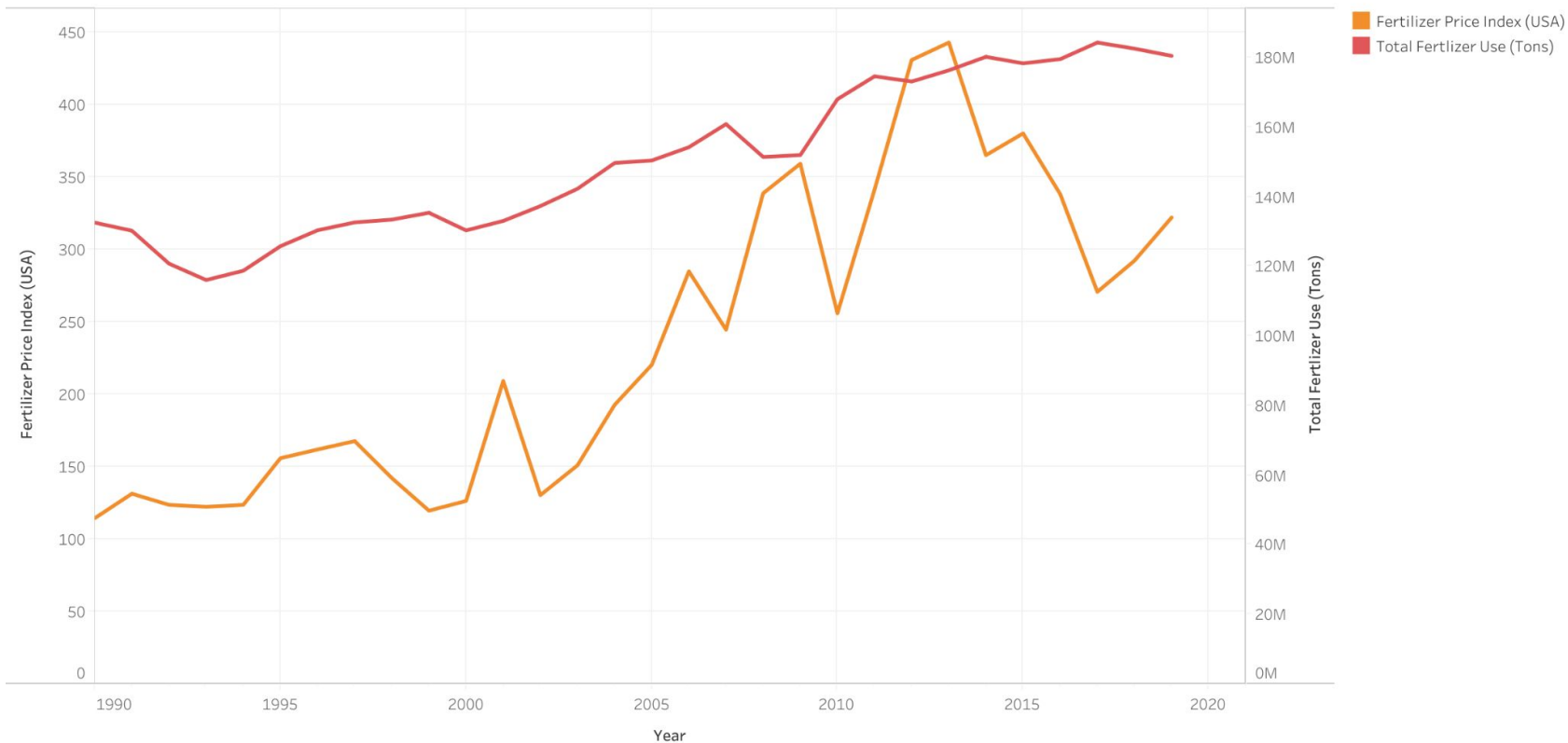
Fertilizer Prices have increased sharply, and are only projected to go up

Does it make sense for farmers to buy the same amount of fertilizer as in years past?

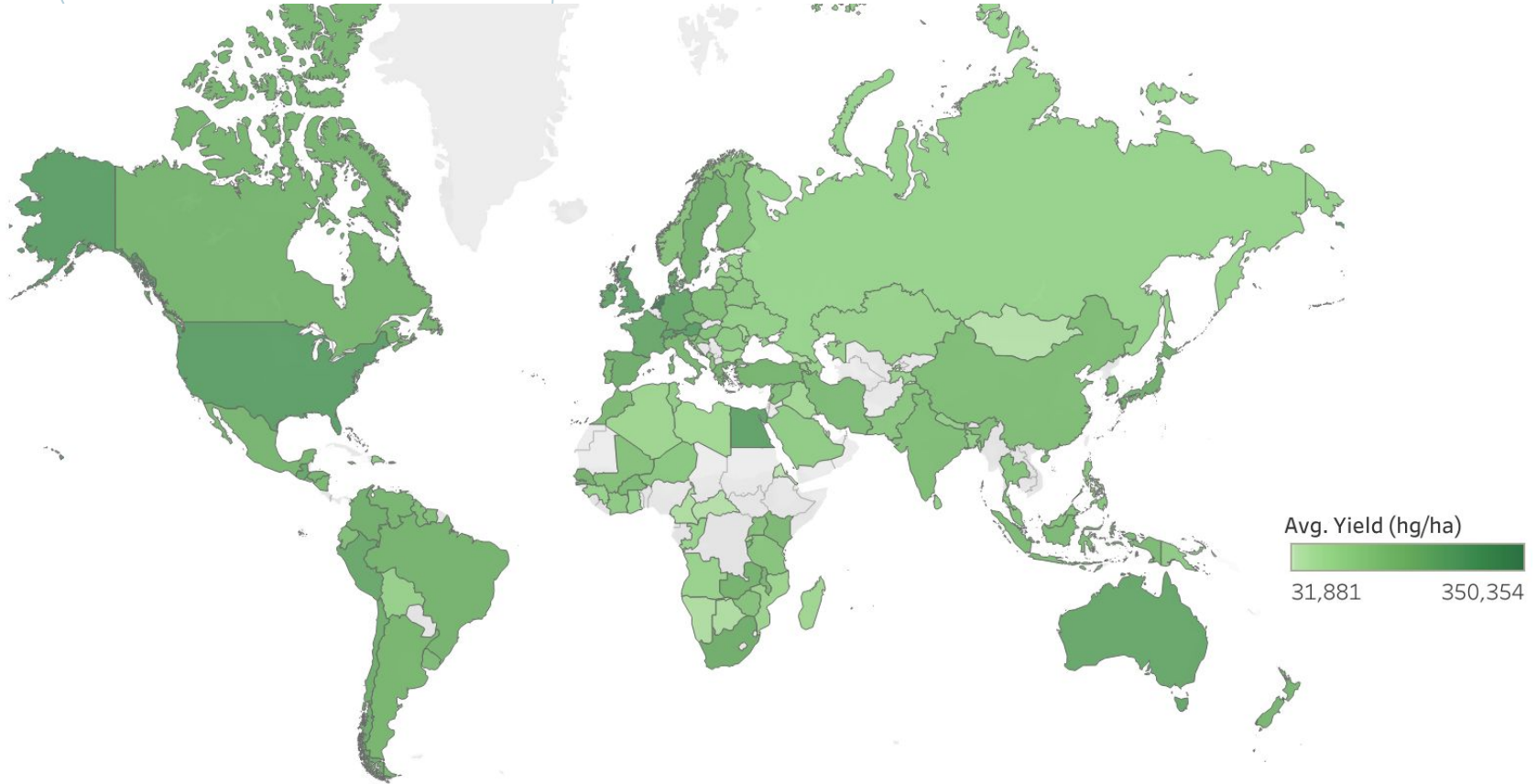
Using historic UN data on fertilizer use and crop yields, can we predict the results of cutting back on fertilizer use

Help farmers maximize profit by optimizing cost

Fertilizer Use and Fertilizer Price Index



Global Crop Yields





Findings

Crop yields are positively correlated with fertilizer use

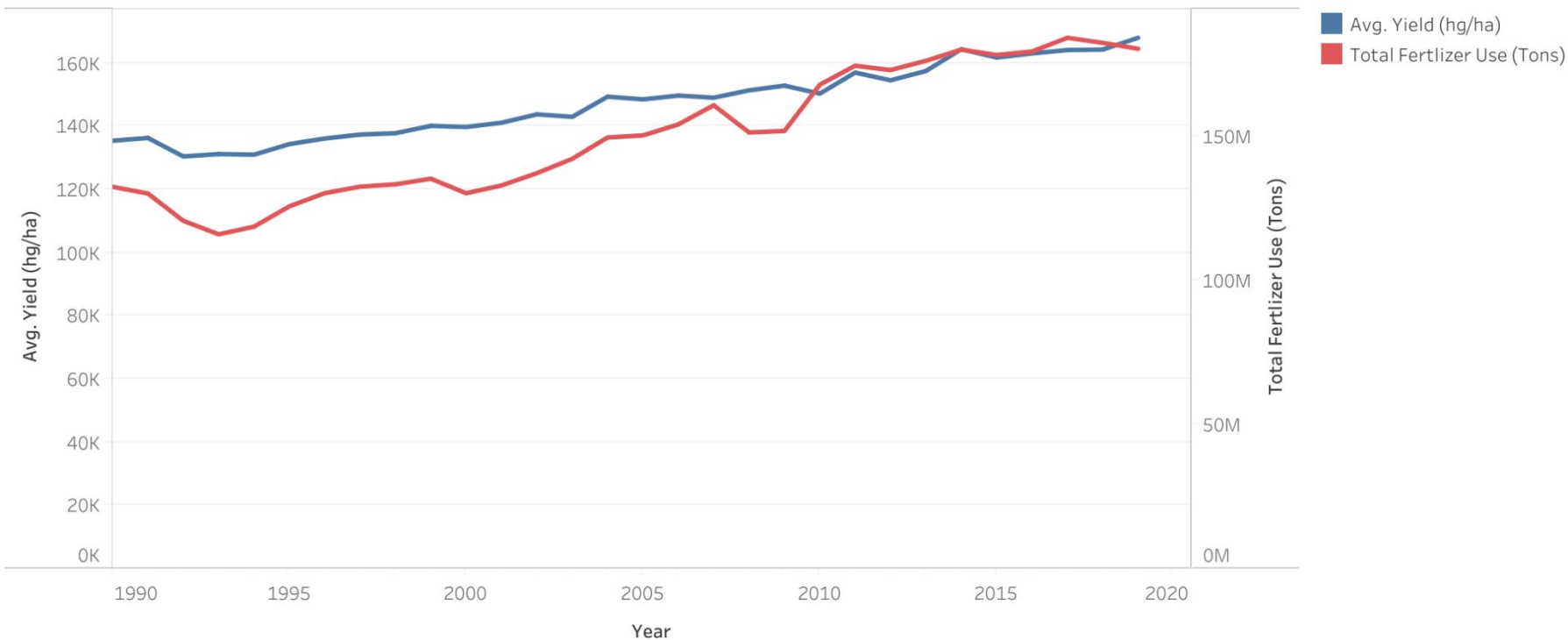
2008-2010 fertilizer use declined without a change in crop yields

Farmers would benefit from modeling inform fertilizer purchase decisions

Climate and economic variables have an effect on yields, would need to be accounted for in fertilizer model

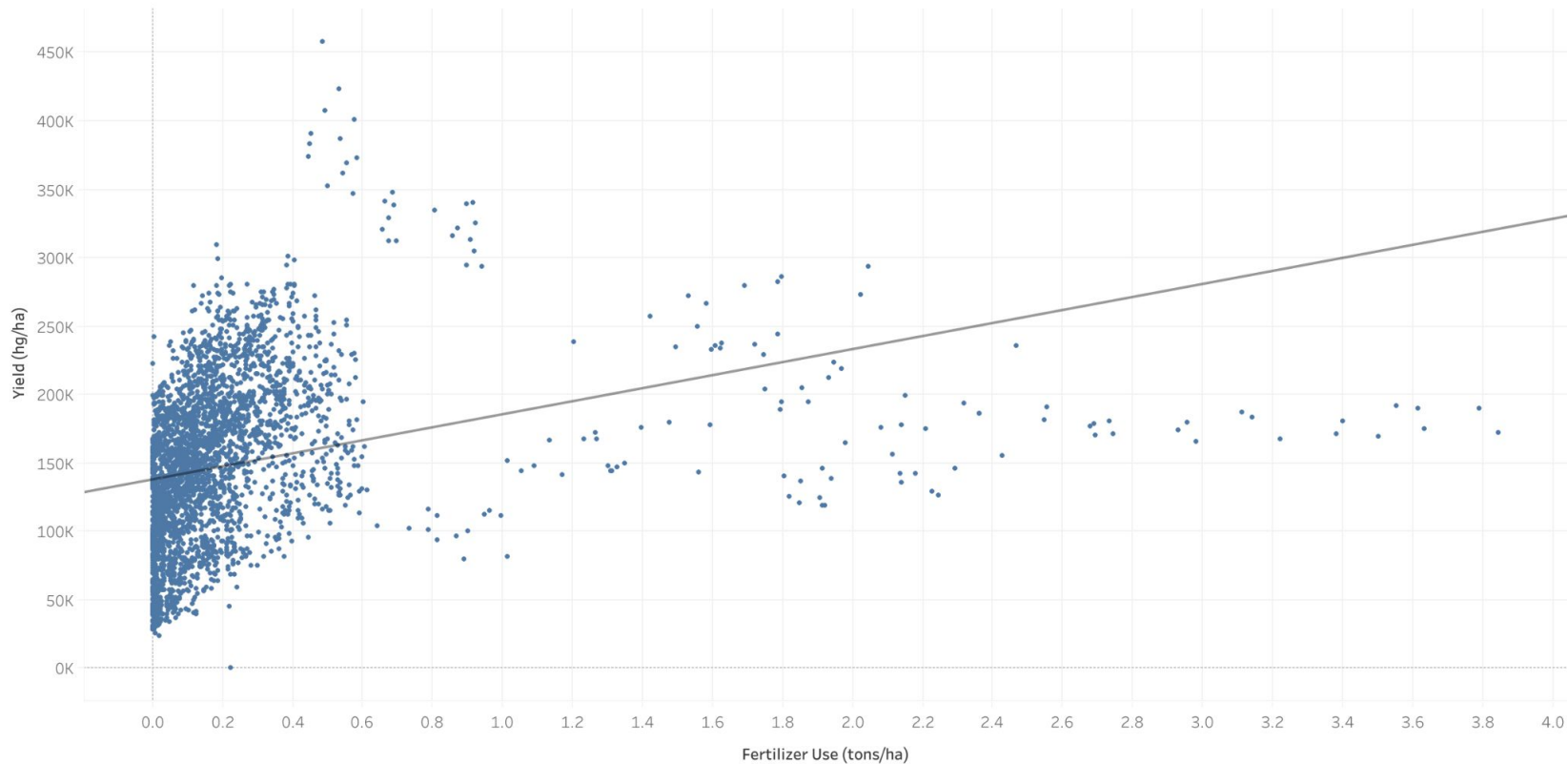
Crop yields don't always increase with fertilizer use

Average Yield and Fertilizer Use



Declining returns to scale with fertilizer?

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Future Data Science Pathway

Regression Modeling to predict the marginal value of a unit of fertilizer

Control for climate and economic variables

Focus analysis on specific regions and crops

Different crops and regions may have different fertilizer needs

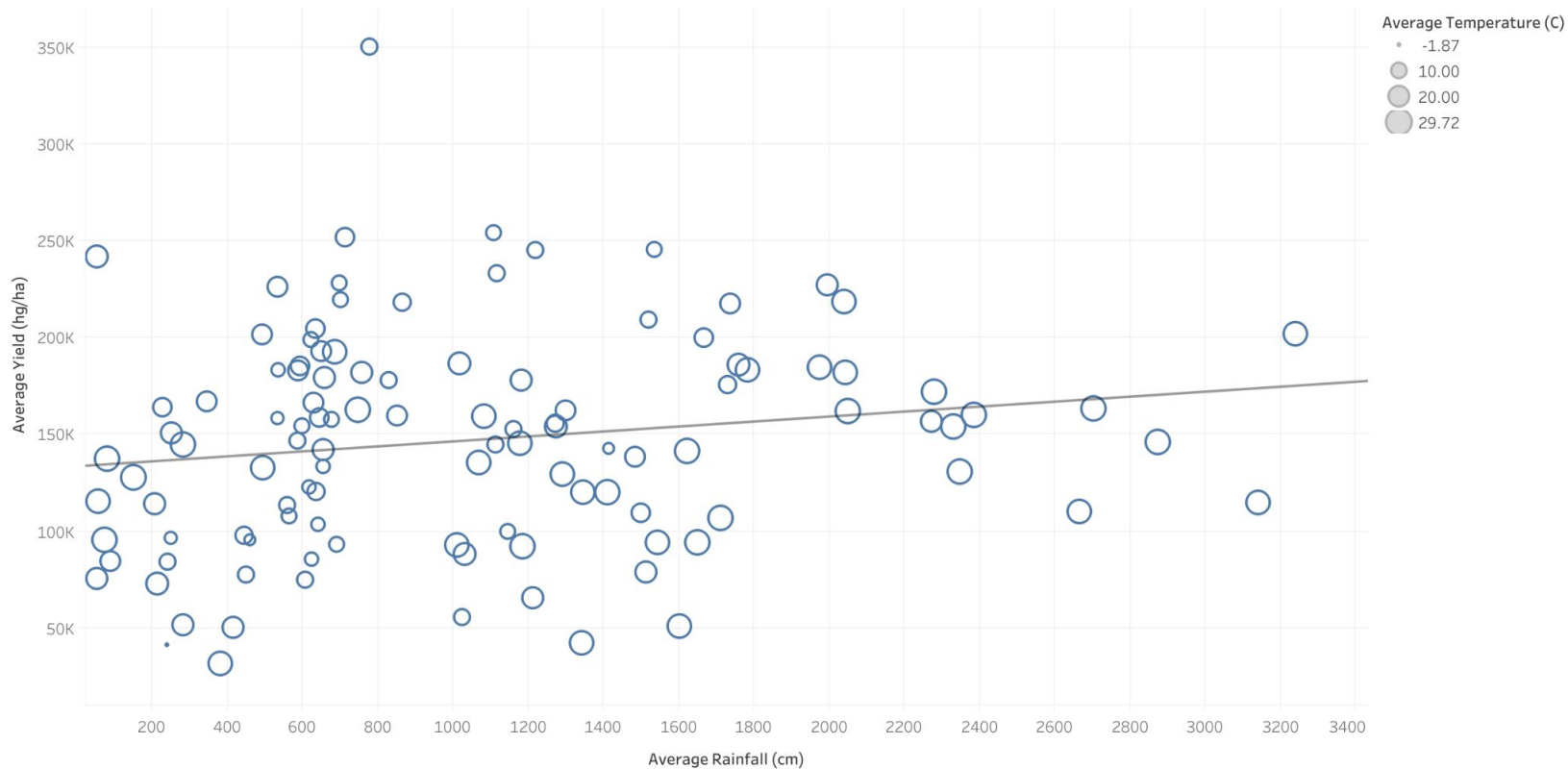
Get better data sources

Climate data for specific areas instead of a whole country

Fertilizer use for specific crops

Appendix

Effect of Climate on Yield





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