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## Humanity's Addiction: A Comparison of the Environmental Impacts of Cane Sugar and Corn Syrup

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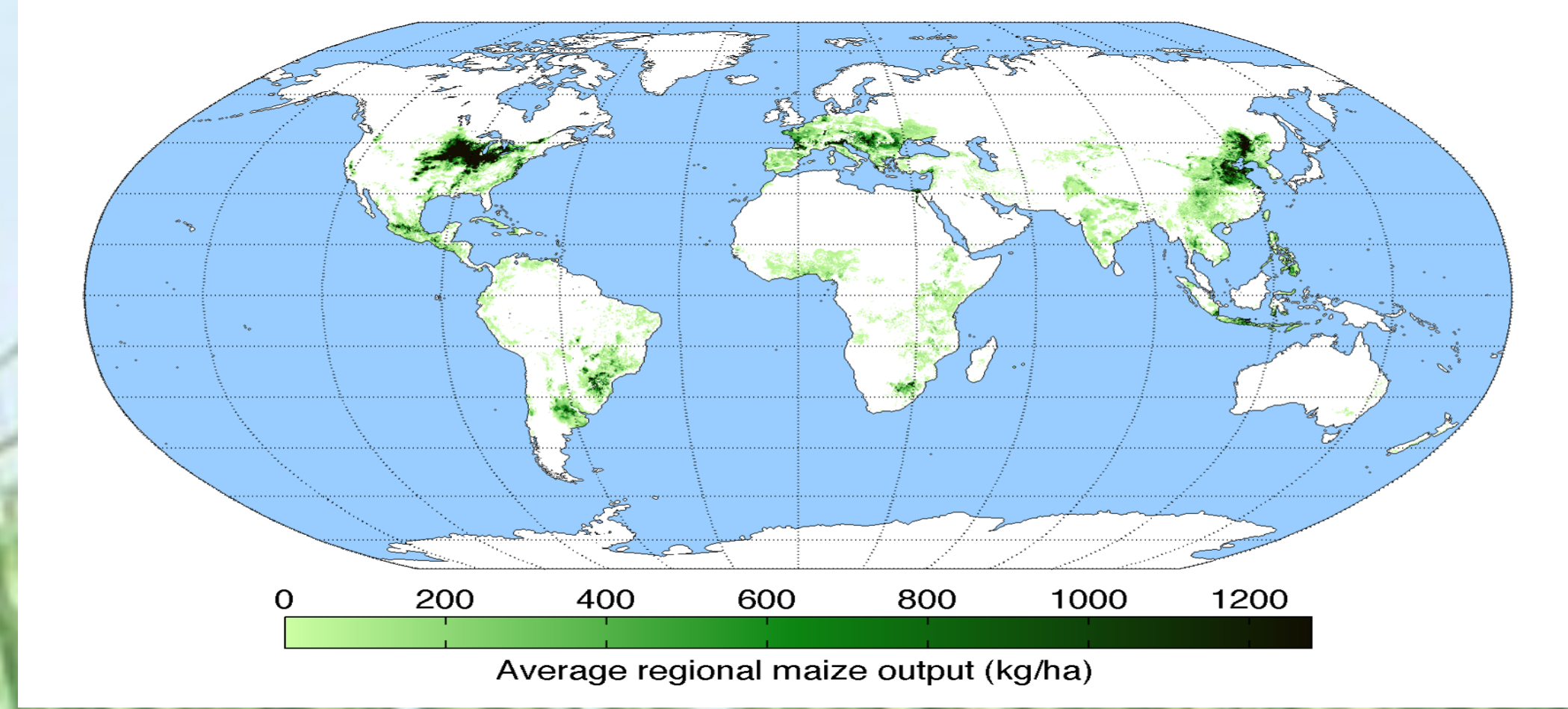
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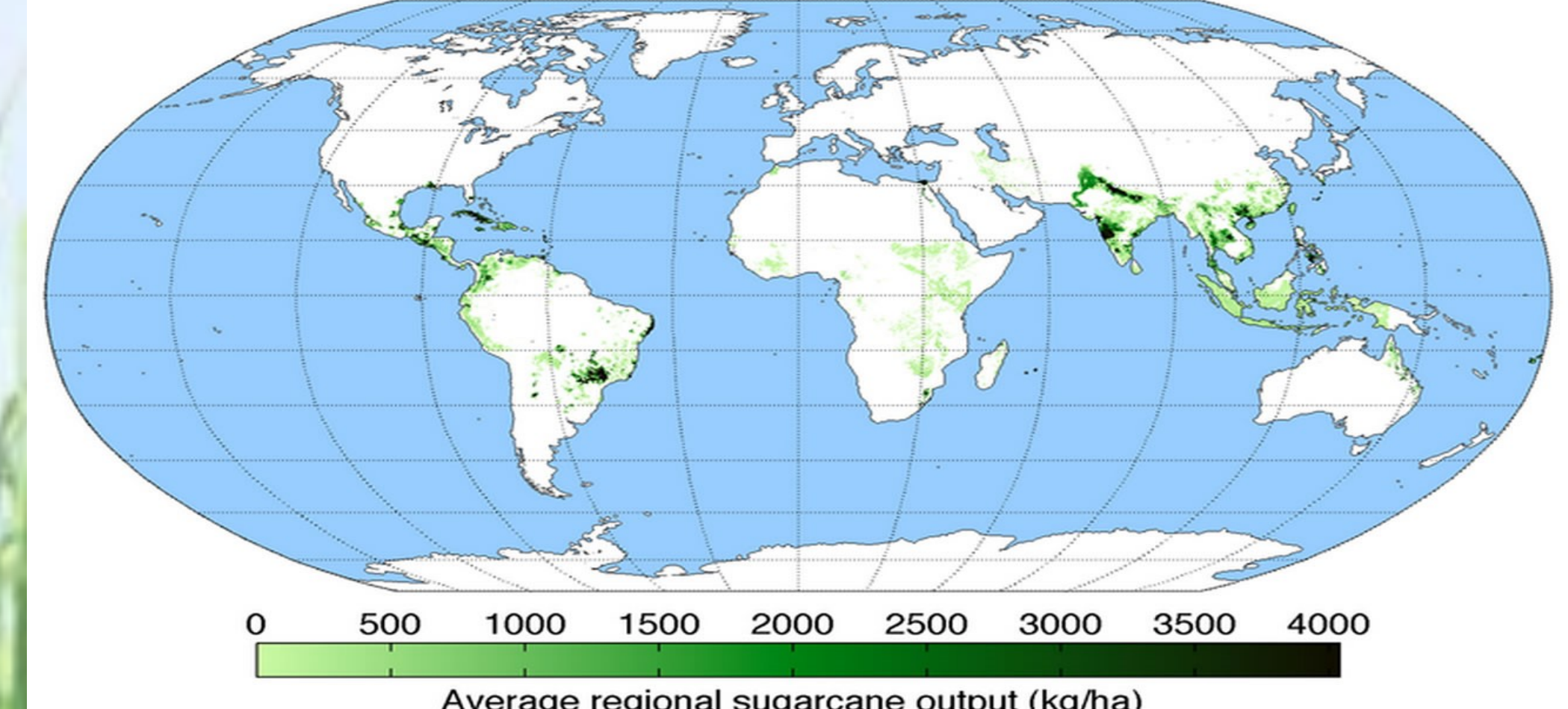
# Humanity's Addiction: A Comparison of the Environmental Impacts of Cane Sugar and Corn Syrup

By: Mallory Jarvi

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<https://decolonialatlas.wordpress.com/2016/10/09/agricultural-maps-of-the-world/>



**Abstract**  
 Sugar Production has changed dramatically in the 20th and 21st century. The trend from natural cane sugar has shifted to a diet highly saturated in high-fructose corn syrup (HFCS). This dramatic shift has had consequences on the environment and human health. I looked at which of these sweeteners is a more sustainable sweetener that can keep up with global sugar demand, especially in developed nations. Through the analysis of books and scholarly articles, I generated my personal conclusion that both sugars are not currently produced sustainably, and the answer may be an overall decrease in sugar consumption or use of traditional sweeteners.

**Methods**

To analyze which sweetener is more sustainable than the other I looked at different criteria. Carbon emissions come from fertilizers used, tillage practices, and in the case of sugarcane burning the crop. I looked at water consumption required to grow the crop. I looked at the land that it is being grown on and the external effects it can have on the surrounding environment. The effects could include erosion, deforestation, human health, and pesticide and herbicide use. These criteria were analyzed using scientific articles and scholarly books on health of the environment and the consumers. I began the research by looking the history of how each sweetener came to be popularized, and the factors this had on the environment concerning pollution and health of the human population. Health was determined by obesity rate and the treatment of the workers who produced the sweeteners.

	Sugarcane	HFCS
<b>Water Needed</b>	~2250 liters/kg	~760 liters/kg
<b>Carbon Emissions</b>	2046kgCO <sup>2</sup> /ha	5313kgCO <sup>2</sup> /ha
<b>Energy</b>	387 k/cal/100g	281 k/cal/100g
<b>Potential for Green Production</b>	Higher Potential	Lower Potential

Fig 1: Table shows a comparison between sugarcane and High-fructose corn syrup. Potential for Green Production refers to the ability of the plant to be produced in a sustainable way. Due to the large amounts of energy needed to convert corn into corn syrup it cannot be produced in a carbon neutral way. Sugarcane can be grown with more sustainable methods.

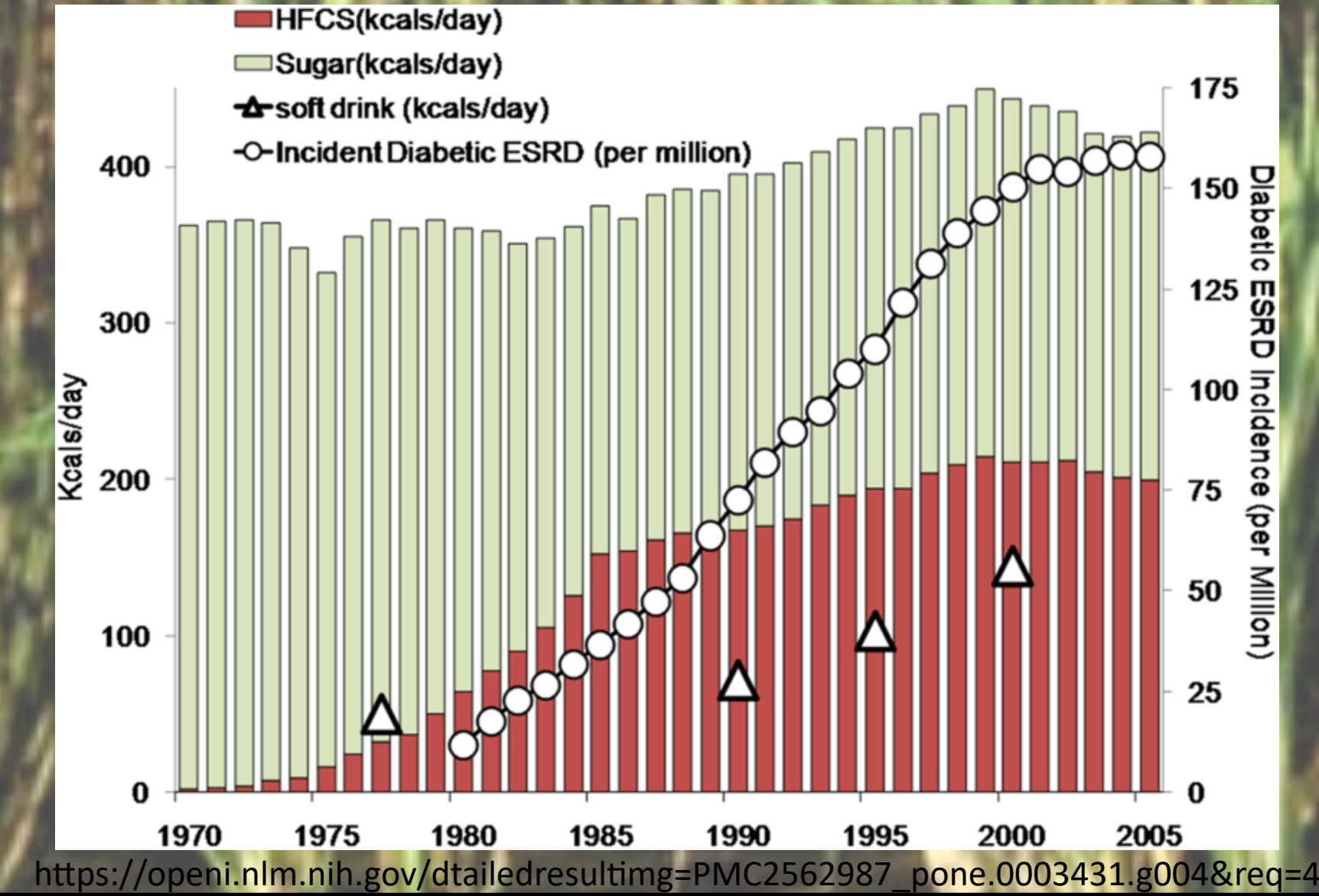
**Results/Conclusion**

- Sugarcane is a more water intensive crop compared to corn and requires more irrigation, thus increasing the rate of erosion if the soil is not protected properly.
- It requires more carbon to produce HFCS due to corn requiring large amounts of carbon to grow, and turning corn into HFCS is an energy intensive process.
- In North America most of the sugarcane is imported causing more fossil fuels to be required for shipping purposes where corn is grown in the United States.
- The sugarcane industry is resulting in a loss of tropical rainforest, where corn is deteriorating the Great Plains soil.
- Sugarcane is not a healthy alternative to high fructose corn syrup because both are basic sugars comprised of sucrose or fructose that cause an increase in weight.



<https://senecafoods.com/seneca-photos>  
 Corn is highly carbon intensive due to the large amounts fossil fuels required to power the heavy machinery.

Fig 2: The consumption of sugar in America has increased over time, and this is not solely due to the creation of HFCS. Total sugar has been increasing, and this can be correlated with the current diabetes epidemic in America



[https://openi.nlm.nih.gov/detailedresultimg=PMC2562987\\_pone.0003431.g004&req=4](https://openi.nlm.nih.gov/detailedresultimg=PMC2562987_pone.0003431.g004&req=4)

The best sugar to consume would be **Fair Trade, real cane sugar**. This is because it would not cause a large amount of fossil fuels to be expelled due to excessive fertilizer use. However, cane sugar that is not fair trade or grown using green practices is not sustainable and thus not a suitable alternative to corn syrup.



<http://www.growingsugarcane.com/2014/01/29/bad-habit-the-burn-we-are-losing>  
 A common practice is to burn the sugarcane stalks prior to harvest in order to rid the plant of leaves. This releases large amounts of carbon, carbon monoxide, and ozone into the atmosphere.