



Resurrecting Reverend Malthus in the 21st Century and Its Implications For Ag Managers

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Our Thesis Questions

Who is Rev. Thomas Malthus?

Why did Malthus matter?

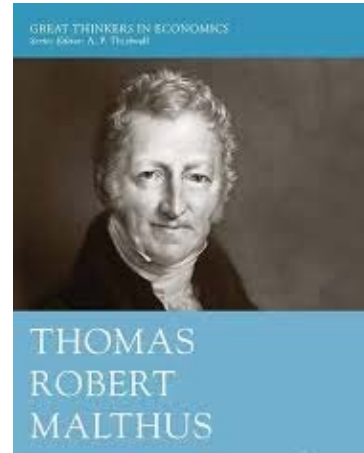
Why should ag managers care?



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Who is Rev. Thomas Malthus?

- Son of Daniel Malthus and Henrietta Graham, whose father and grandfather were apothecaries (operated pharmacies) serving King George I and King George II
- Born February 13/14, 1766, the 6th of 7 children
- He married his cousin, Harriet, who was 11 years younger, at 38 years and they had three children (a son and two daughters)
- He died suddenly of cardiovascular disease on December 23, 1834, at age 68 years



Who is Rev. Thomas Malthus?



- English cleric, economist, and Fellow of the Royal Society (FRS)
- Educated at Cambridge, graduating in 1784 and received his MA in 1791
- Became a priest in the Church of England in 1789

Why Did Malthus Matter?

We know of Rev. Malthus today because of his book – *Essay on the Principle of Population* (1798): He produced six editions of the book by 1826, revealing the evolution of his perspectives

Thesis: There is a disparity between the population growth rate and food production growth rate

Origin: Conversation with a friend about William Goodwin's Essay II: Of Avarice and Profusion published in *The Enquirer: Reflections on Education, Manners, and Literature*, London: GG and J Robinson, 1797

Why Did Malthus Matter?

- Malthus asked:
 - Is the welfare of humanity going to experience limitless accelerated growth or oscillate between misery and happiness?
- Malthus bases his arguments on two assumptions:
 - **Food is necessary for existence;**
 - The passion between men and women is necessary and uncontrollable (especially among the lower classes)



Why Did Malthus Matter?

- These assumptions led Rev. Malthus to state his theory of population and food:
 - *“Population, when unchecked, increases in a geometric ratio. Subsistence increases only in an arithmetical ratio.”*
- According to Malthus, the relationship between unchecked population and food production is the principal barrier to improvement in society’s welfare



Why Did Malthus Matter?

Meanwhile, he postulated two solutions to the problem:

- Moral: Delay marriage as long as possible
- Positive: Famine, disease, and war



Why Should Ag Managers Care About Malthus?

- For more than 50 years, Malthus' work has become the standard reference for doom predictions
 - Paul Ehrlich: *The Population Bomb* (1968) – “Overpopulation and overconsumption will cause resource depletion at a rapid rate”
 - Club of Rome: *Limits of Growth* (1972) – Economic growth is capped by resource depletion
 - David Wallace: *The Uninhabitable Earth* (2019) – *Life After Warming* – untold suffering awaiting mankind if nothing is done about climate change



Why Should Ag Managers Care About Malthus?

What do these views imply for agriculture and ag managers?

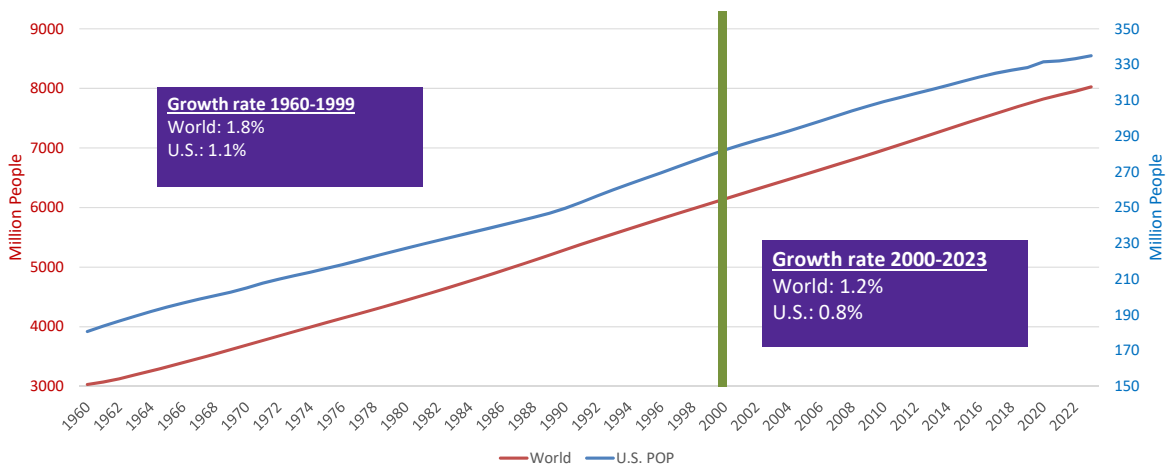
- They influence policy and direct resources
- Reactions and responses could have adverse effects on many communities and businesses

Isn't the World Coming to an End?

- Let us look at Malthus' two principal variables and look at their trends in the U.S., the world, and in three case countries
 - Ghana
 - Kenya
 - Nigeria
- Why these countries?
 - Because you don't hear stories in the news unless they are bad stories
 - And there is a lot of good happening

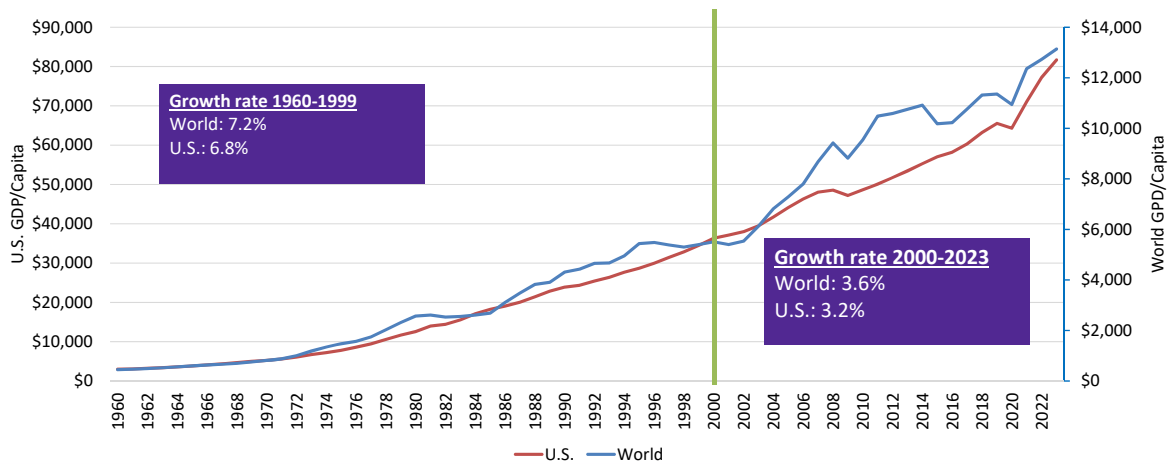
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U.S. and World Population Trend



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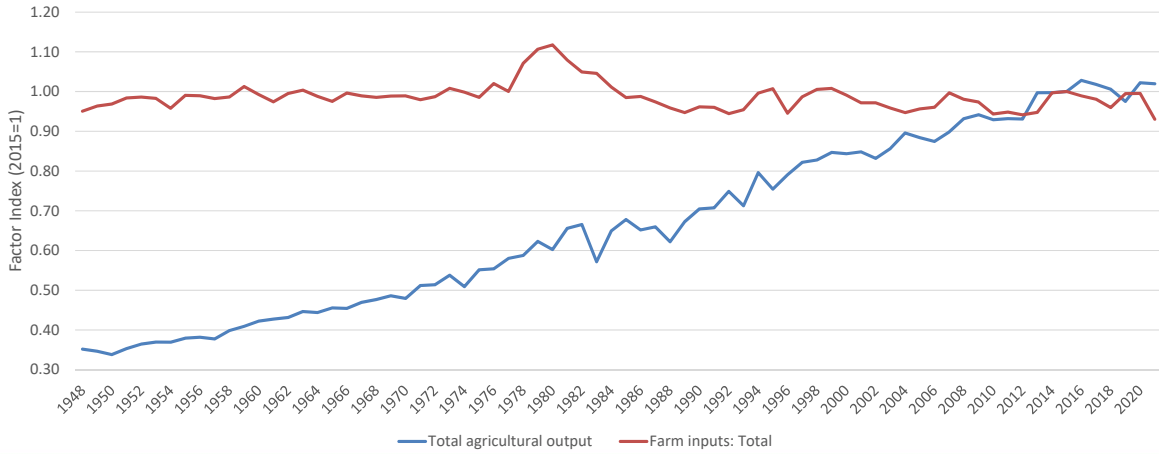
U.S. and World GDP/Capita Trend



Food, Income and Population

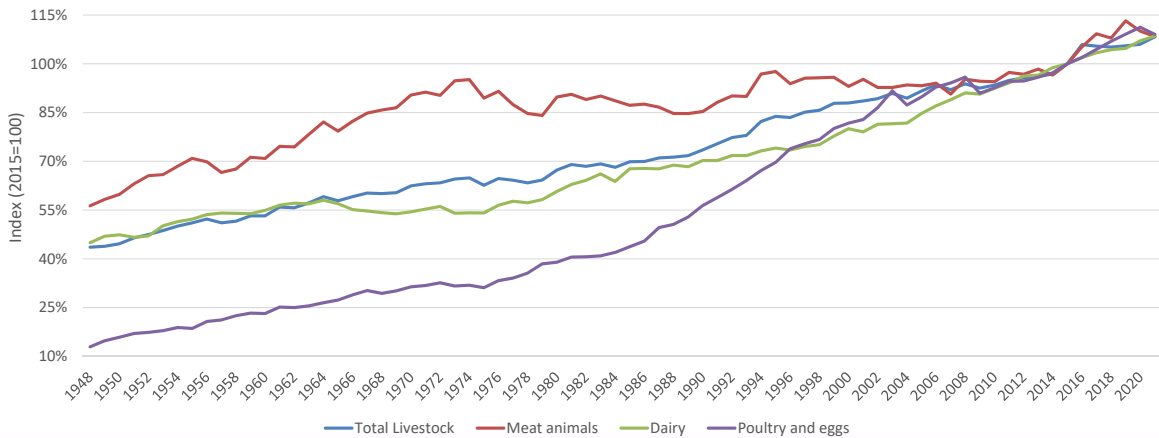
- Globally, income per person is growing faster than population
- We will show next that ag productivity is also growing faster than population
- At the mean, people should not be going to bed hungry or dying of hunger because there is not enough food
- And they are controlling their passions as evidenced by falling fertility rates in virtually all countries
- Interventions in the natural course of events always produce suboptimal outcomes

U.S. Total Ag Output and Input Trends (2015=1)



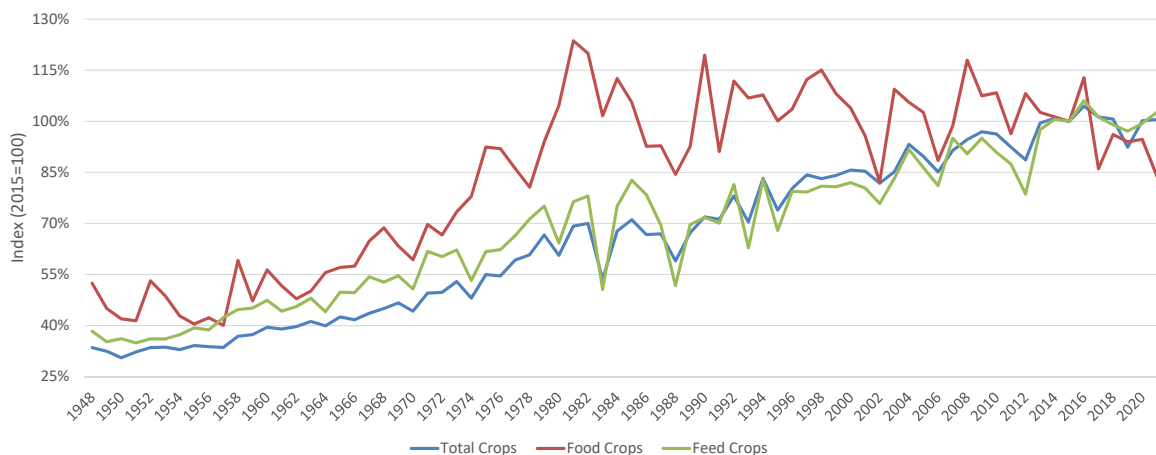
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Livestock Productivity in the U.S. (2015 = 100)



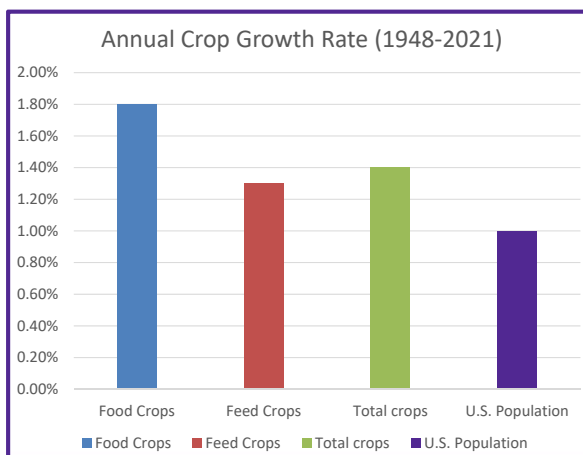
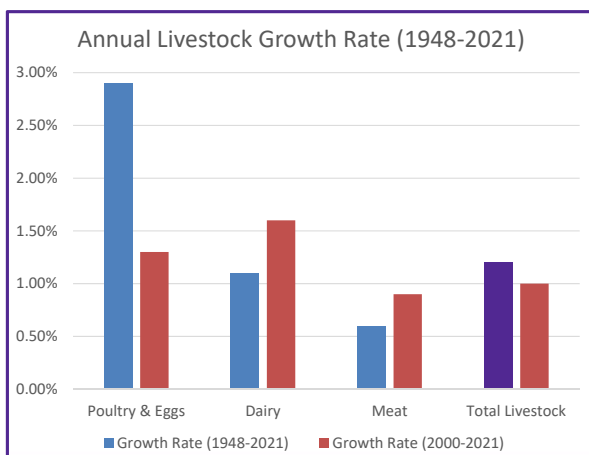
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Crop Productivity in the U.S. (2015 = 100)



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U.S. Population and Food



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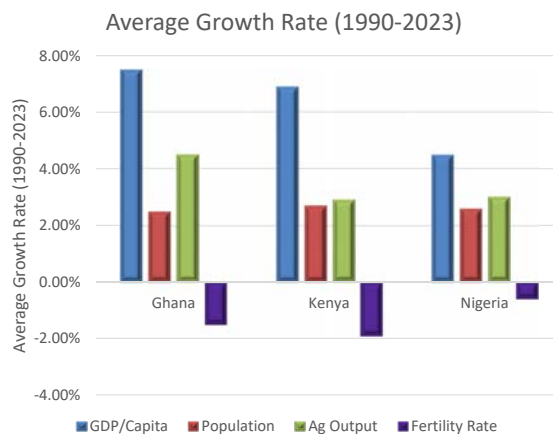
Trends in Ghana, Kenya, and Nigeria



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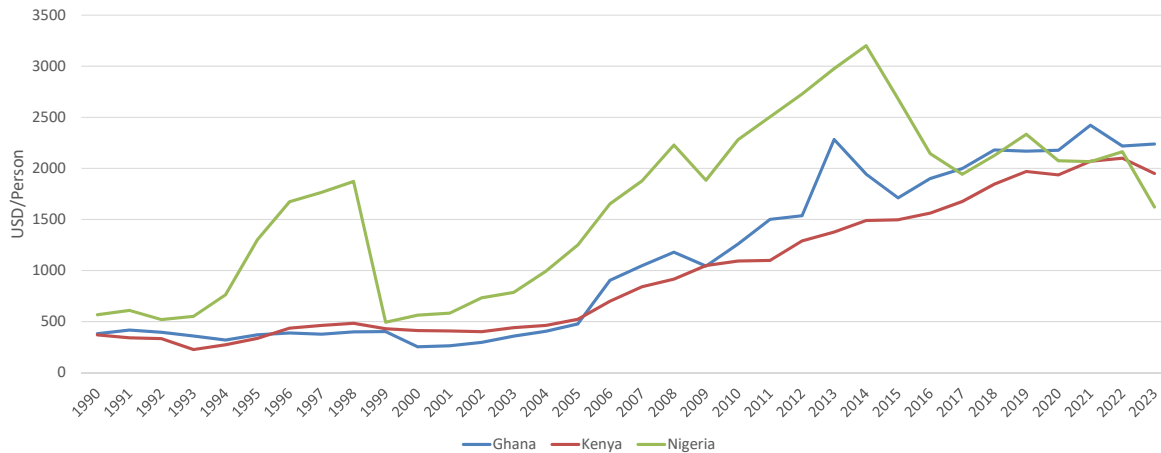
Things Are Moving in the Right Direction

- Ghana, Kenya, and Nigeria account for about 26% of the total population of Sub-Saharan Africa
- They are democracies and have had stability (thus far) in a region that is still tentative
- The growth rates of agricultural output and GDP/capita exceeded the population growth rate in all countries, but only barely in Kenya and Nigeria
- Fertility rates declining in all three countries



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Trends in Average Income (GDP/Capita)

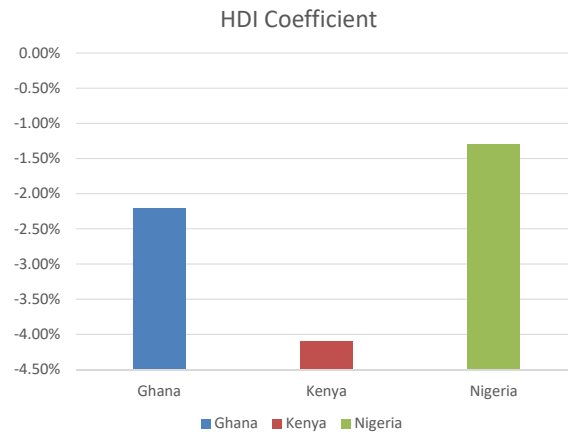


Averages Can Be Deceptive

- More than 40% of GNI in the three countries is controlled by the top-20% of income earners
 - Ghana: \$5710 compared to \$2,350 (2.4x)
 - Kenya: \$5,157 versus \$2,171 (2.4x)
 - Nigeria: \$4,465 against \$2,106 (2.1x)
- This segment could be profitable potential markets for U.S. ag for the right products with the right strategies

Fertility Rate and Human Development Index

- Human Development Index (HDI) is a UN index developed from education, life expectancy, and GDP per capita
- We estimated that between 1990 and 2023, a 1%-point increase in the HDI resulted in 2.2%, 4.1% and 1.3% decrease in the fertility rate
- All estimates statistically significant at the less than 1% level



No Doomsday on The Horizon

- People are getting more educated, living longer, and richer
- They have access to more exciting alternative forms of entertainment – online streaming is now available in most countries as is online betting (gambling)
- As a result, having more babies is decreasing in its priority, leading to declining fertility rates
- Rev. Malthus' conjectured theory rejected in our time



What Do We Do?

- We cannot change what interest and motivate others
- We can only minimize their adverse effects on our own ability to achieve our own objectives
- The numbers show that potential markets are emerging everywhere
- The question about food in the future is not whether any country or region can feed itself
- But can they produce enough to procure the food they need
- And U.S. (Kansas) farmers must be ready to be the most competitive suppliers of that food regardless of what it is and where the consumers are



Thank you

Conversations

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