

# ENVISIONING TOMORROW'S AG MARKETS

Kansas City Federal Reserve Bank 2013 Agricultural Summit

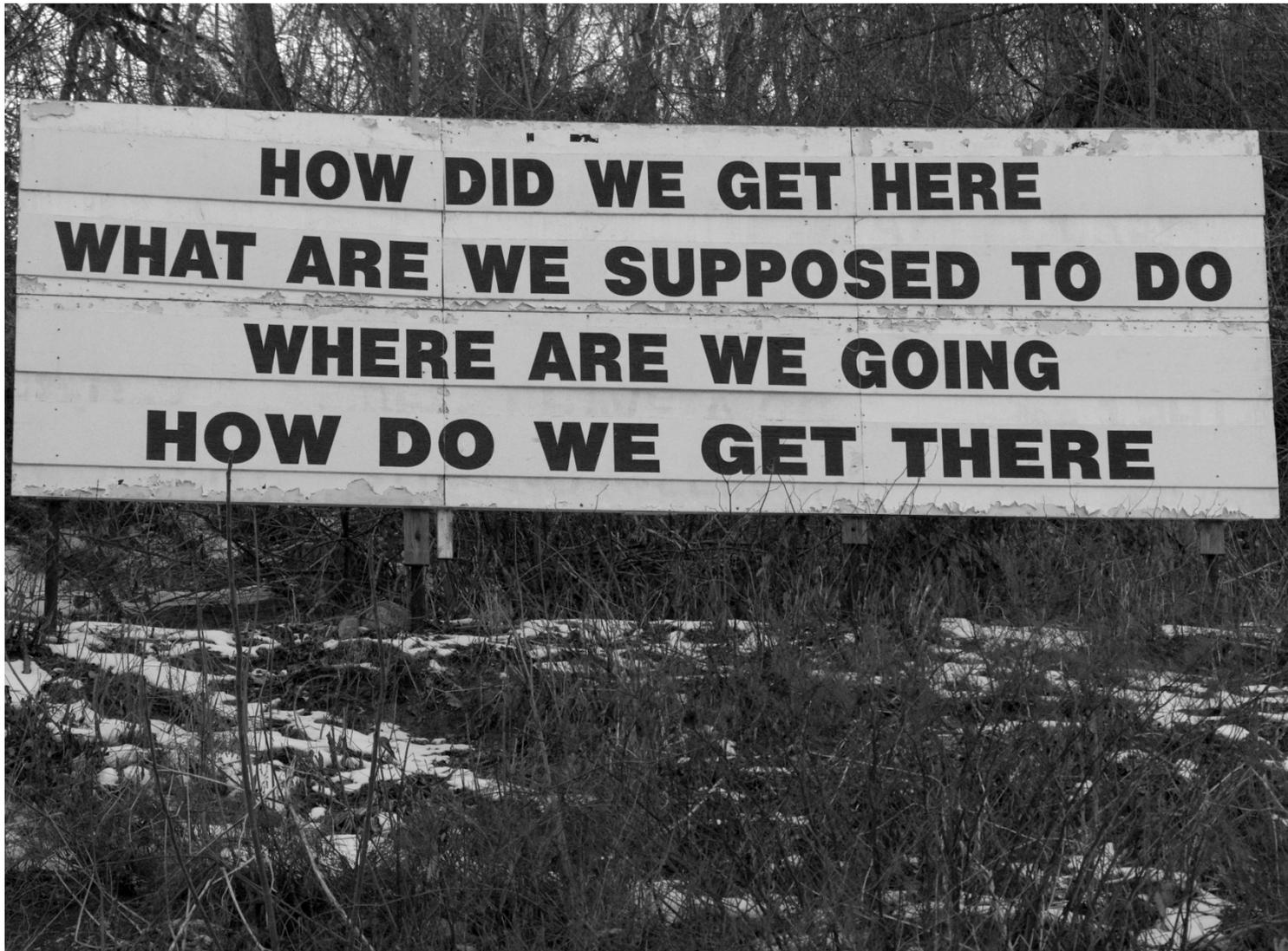
July 17, 2013



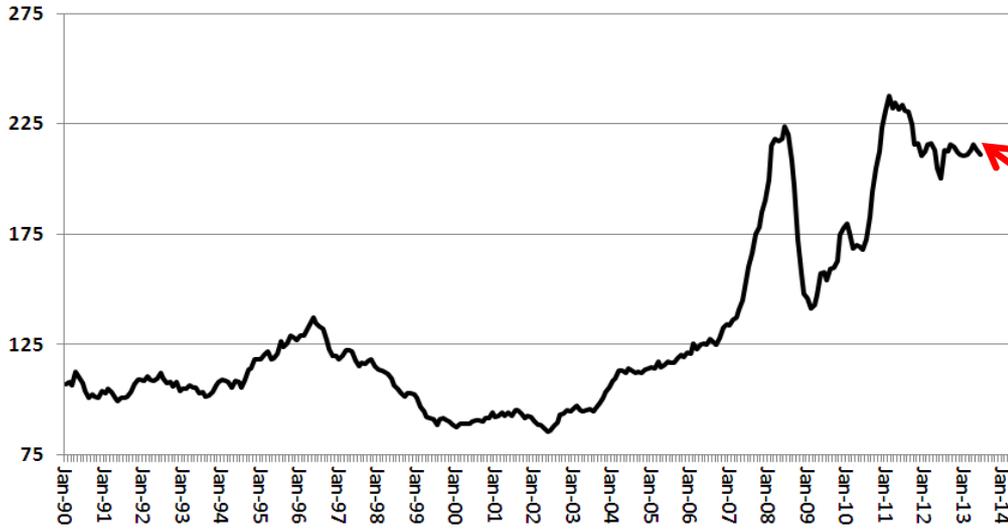
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# ENVISIONING TOMORROWS AG MARKETS

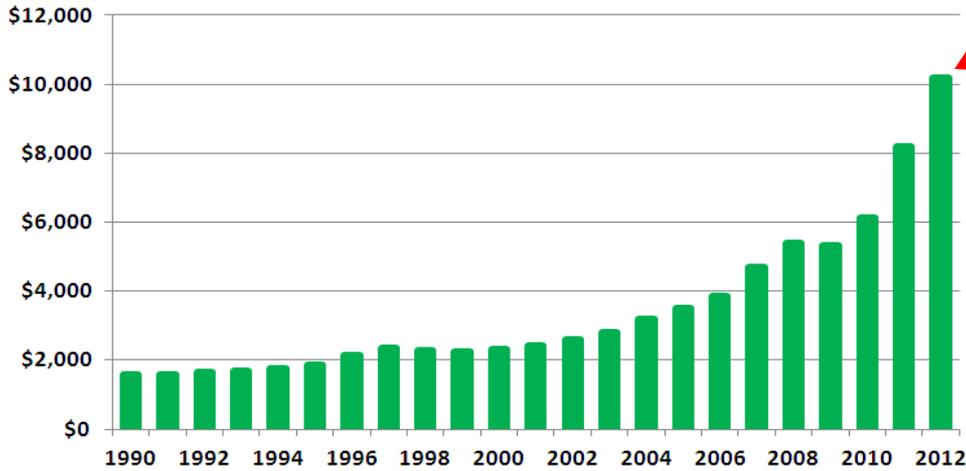
- Where are we, and how did we get here?
- The Challenge of Feeding the World!
- Implications for US Agriculture



### UN FAO Food Price Index

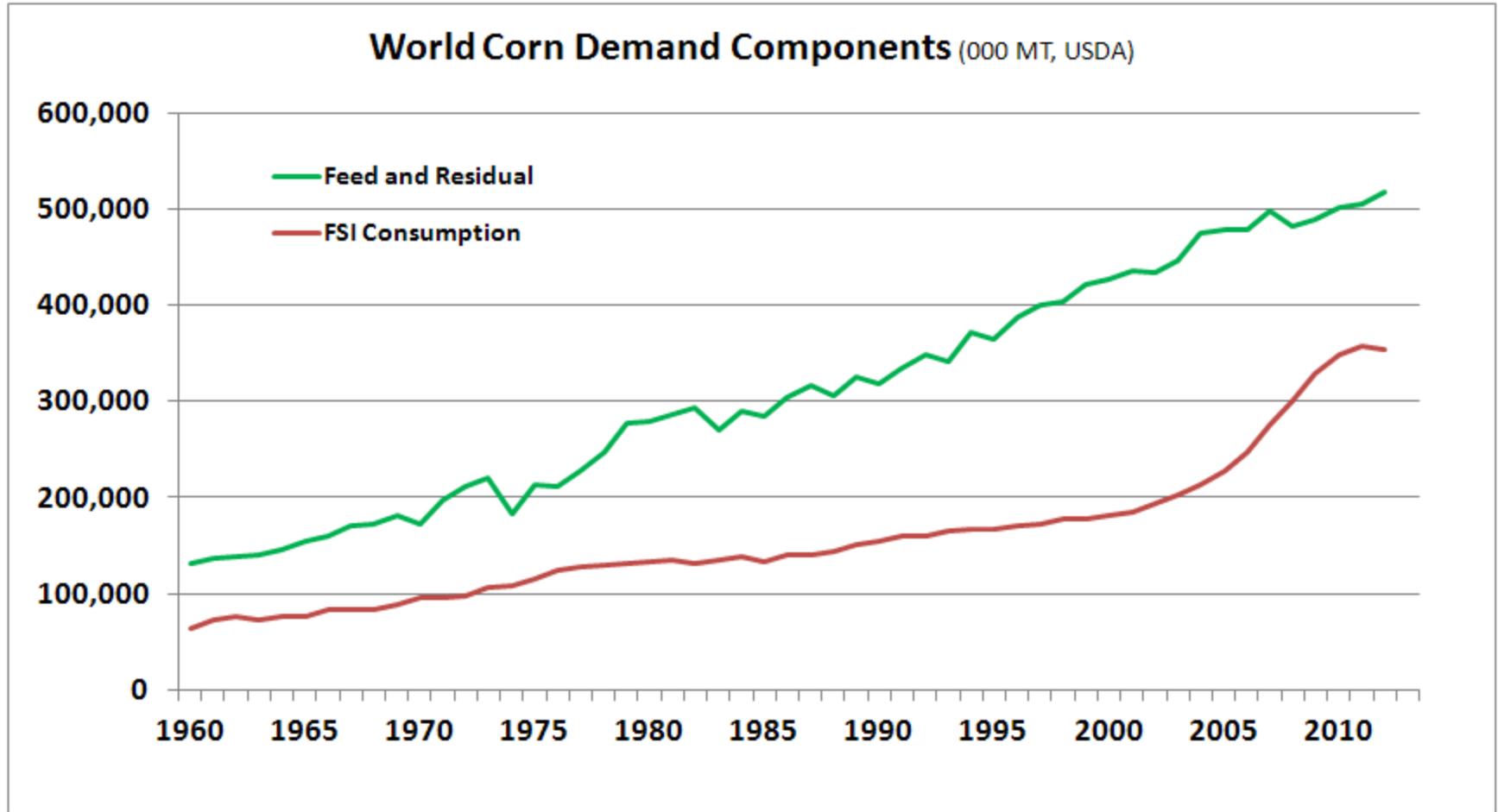


### High grade Iowa farmland prices (per acre, ISU survey)



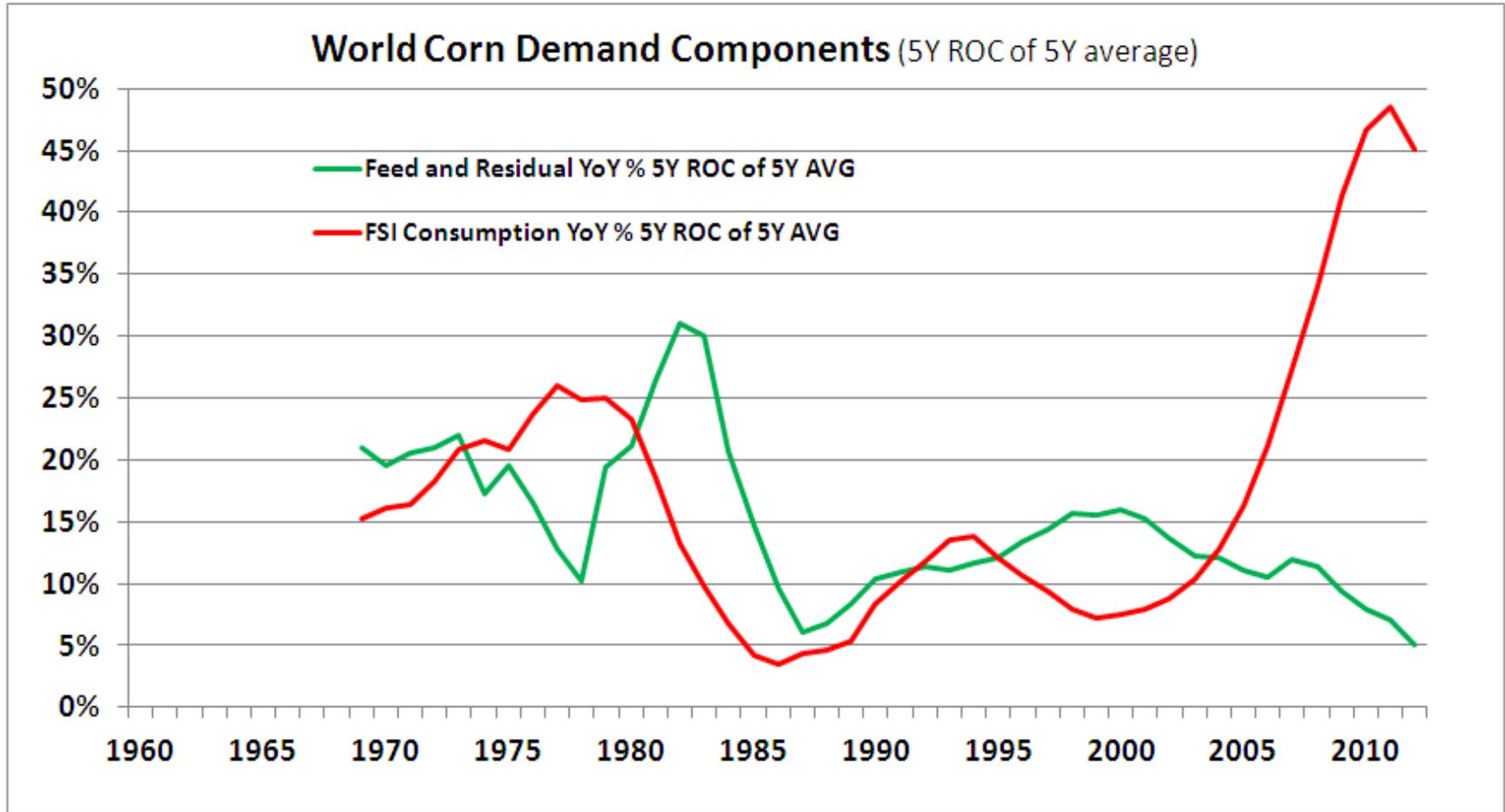
# LONG TERM DEMAND PERSPECTIVE: CORN AS PROXY

Feed & Residual as “natural demand”



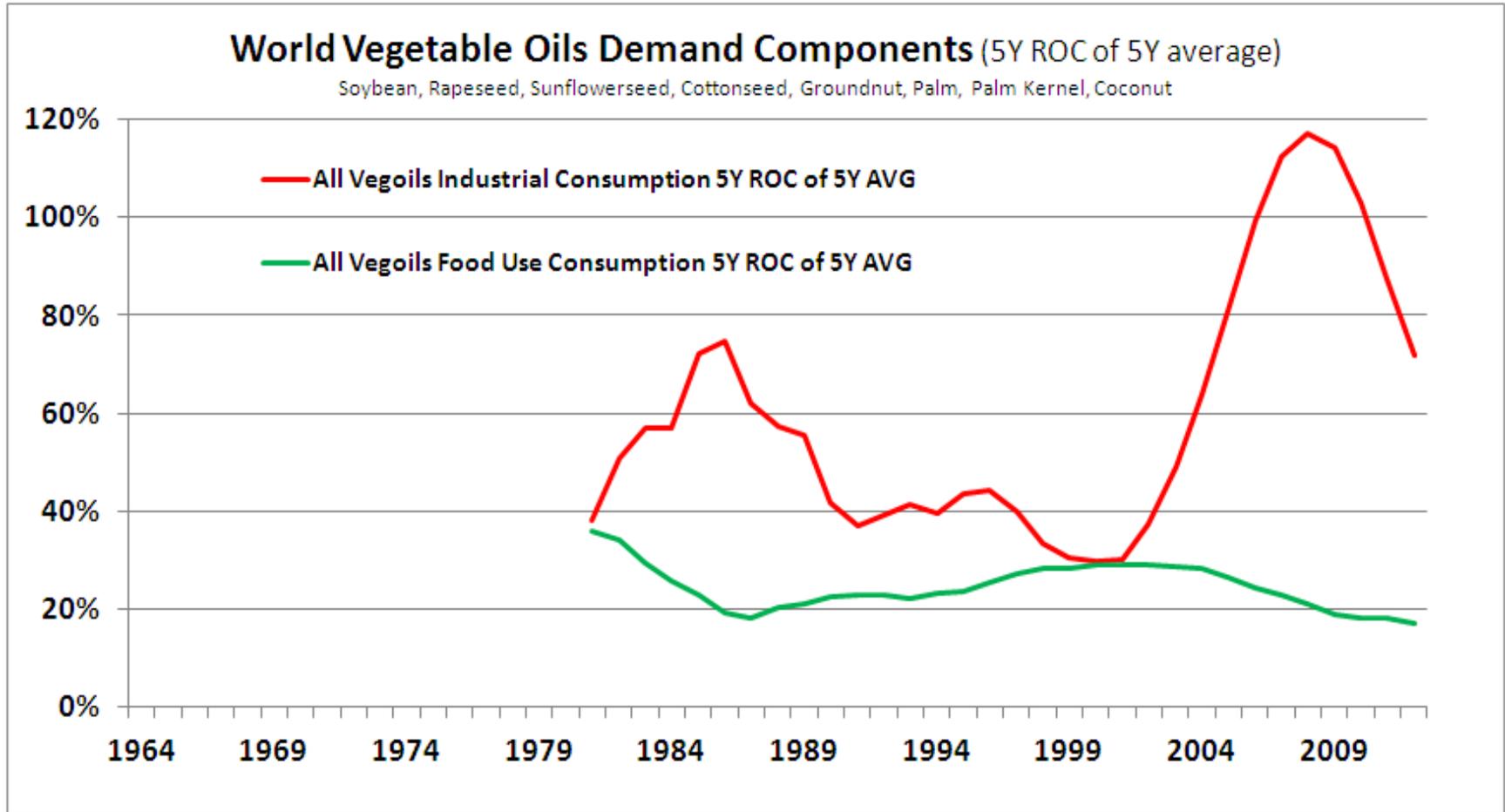
# LONG TERM DEMAND PERSPECTIVE: SPOT THE OUTLIER?

- “Natural demand” growth rate slowing since 1980s.
- “Mandated demand” spiked in unprecedented manner.



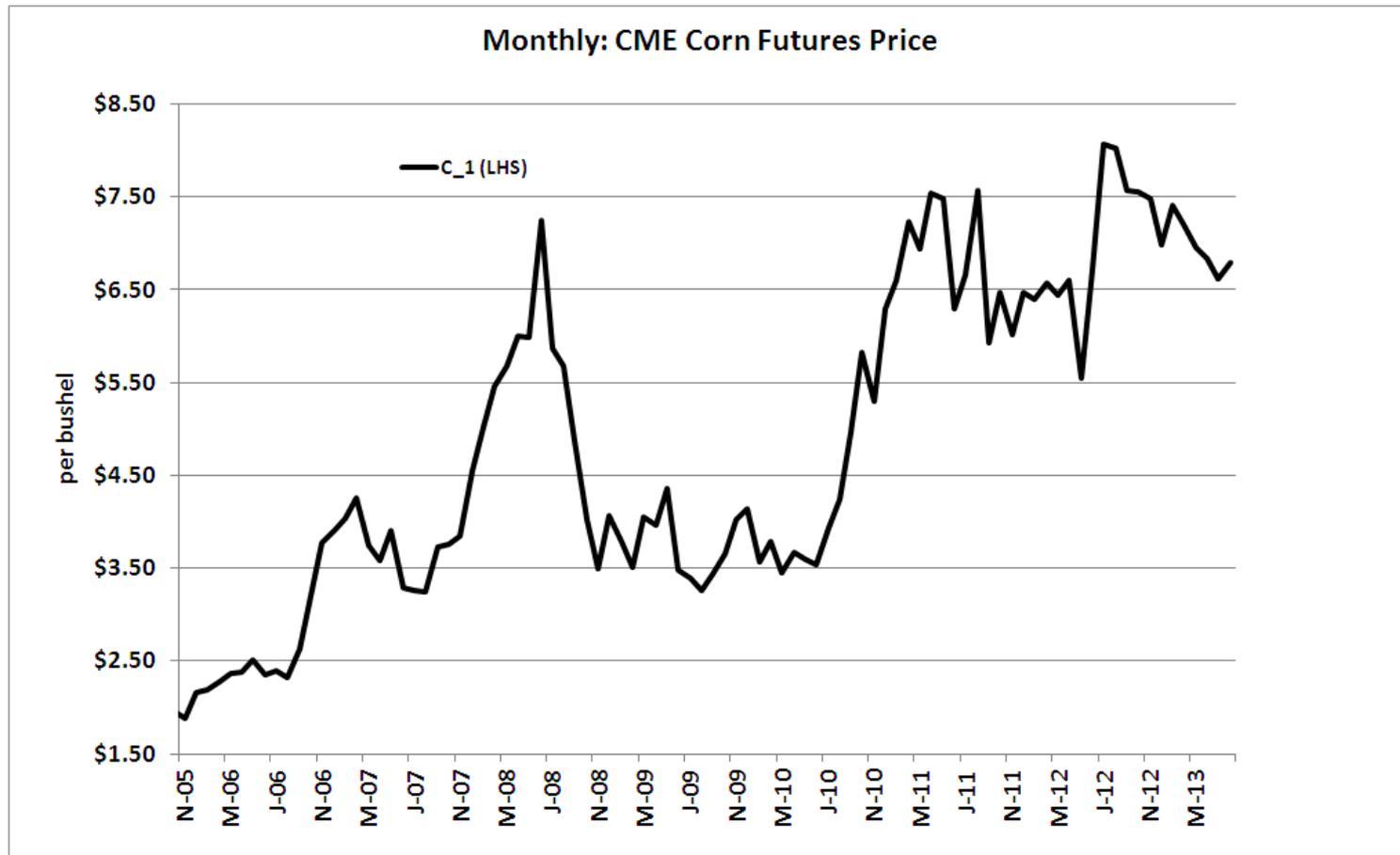
# NOT JUST A CORN THING: VEGOIL DEMAND COMPONENTS

- “Mandated Demand” spike over 2X that of corn.



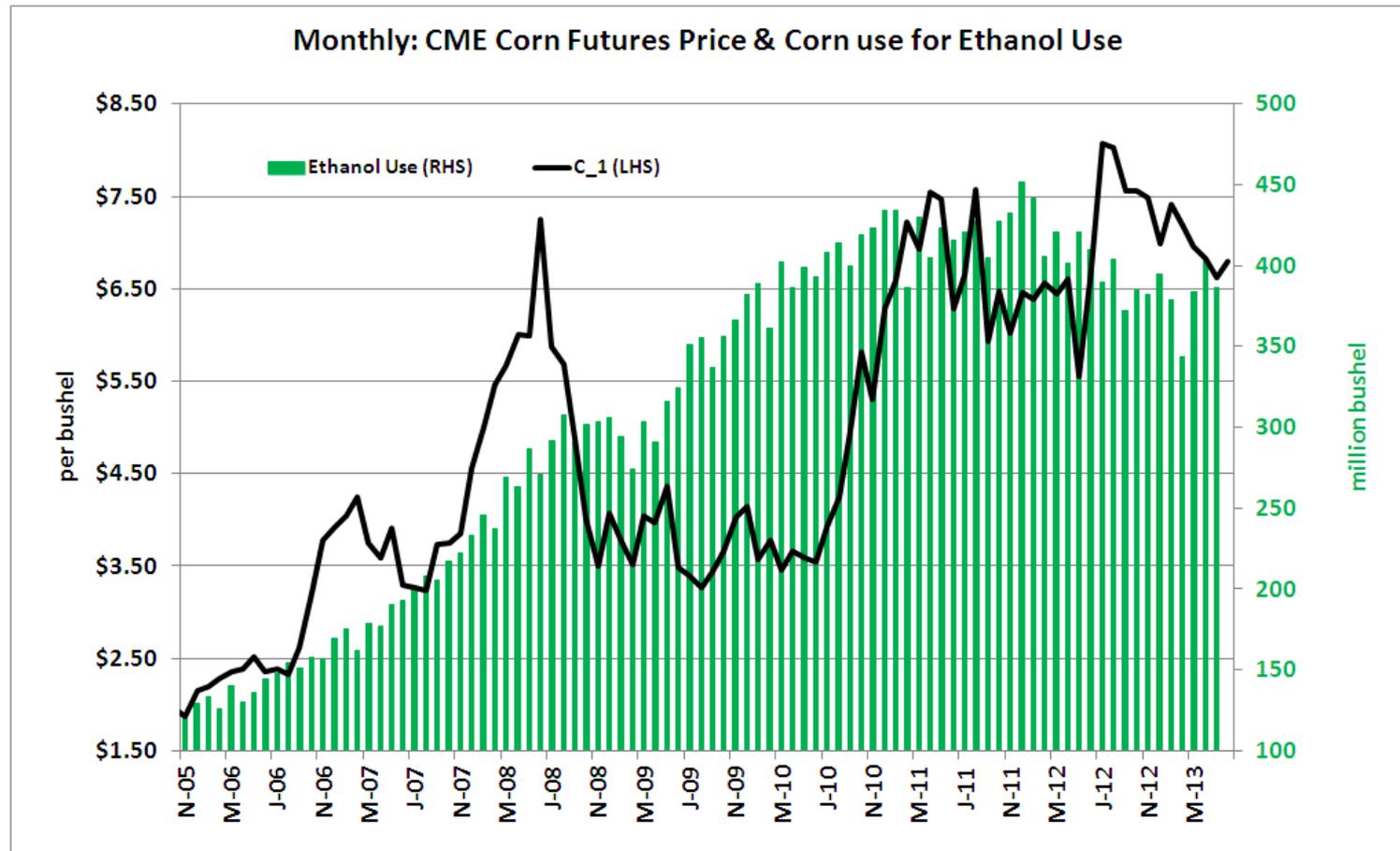
# CORN PRICES SINCE THE BIOFUEL'S INFLECTION POINT

...December 2005 as the launch point



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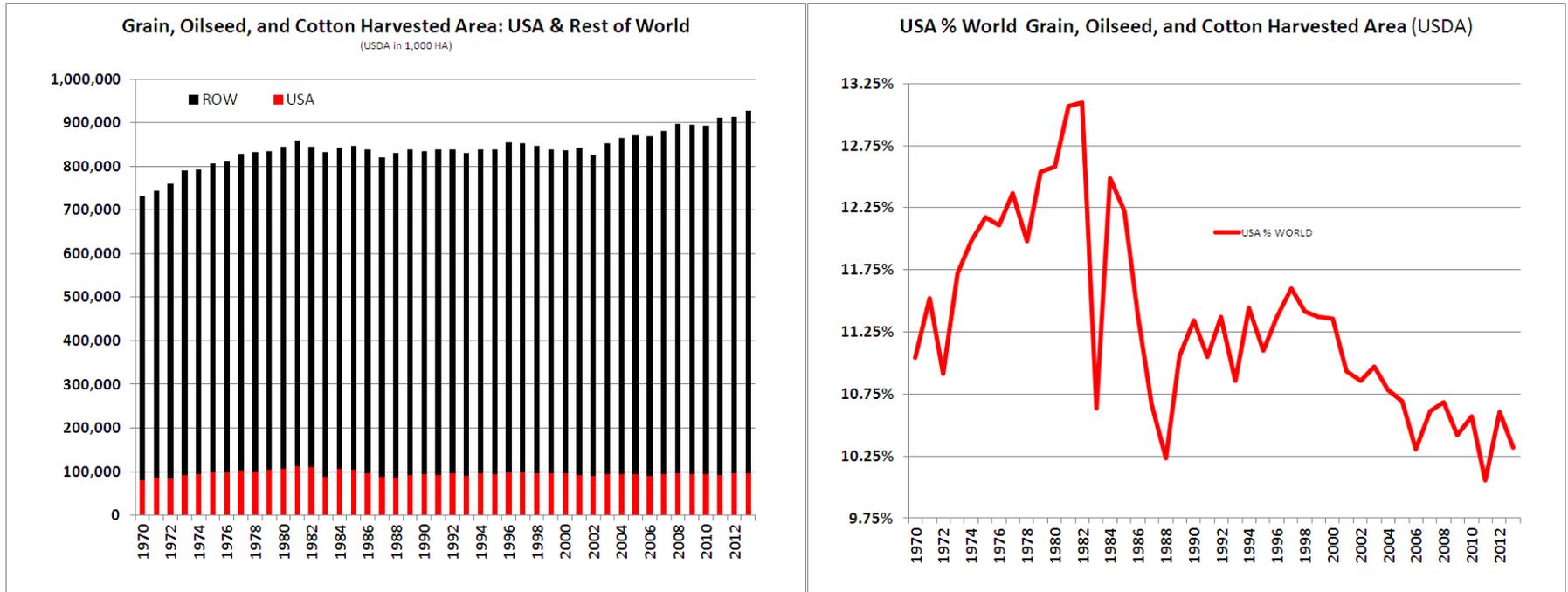


## NOT SOLELY ABOUT BIOFUEL: OTHER FACTORS

- Investor demand for commodity futures; passive commodity indices
- Global Monetary Policy
- Weaker USD: trade weighted USD lost more than 30% of value since 2002

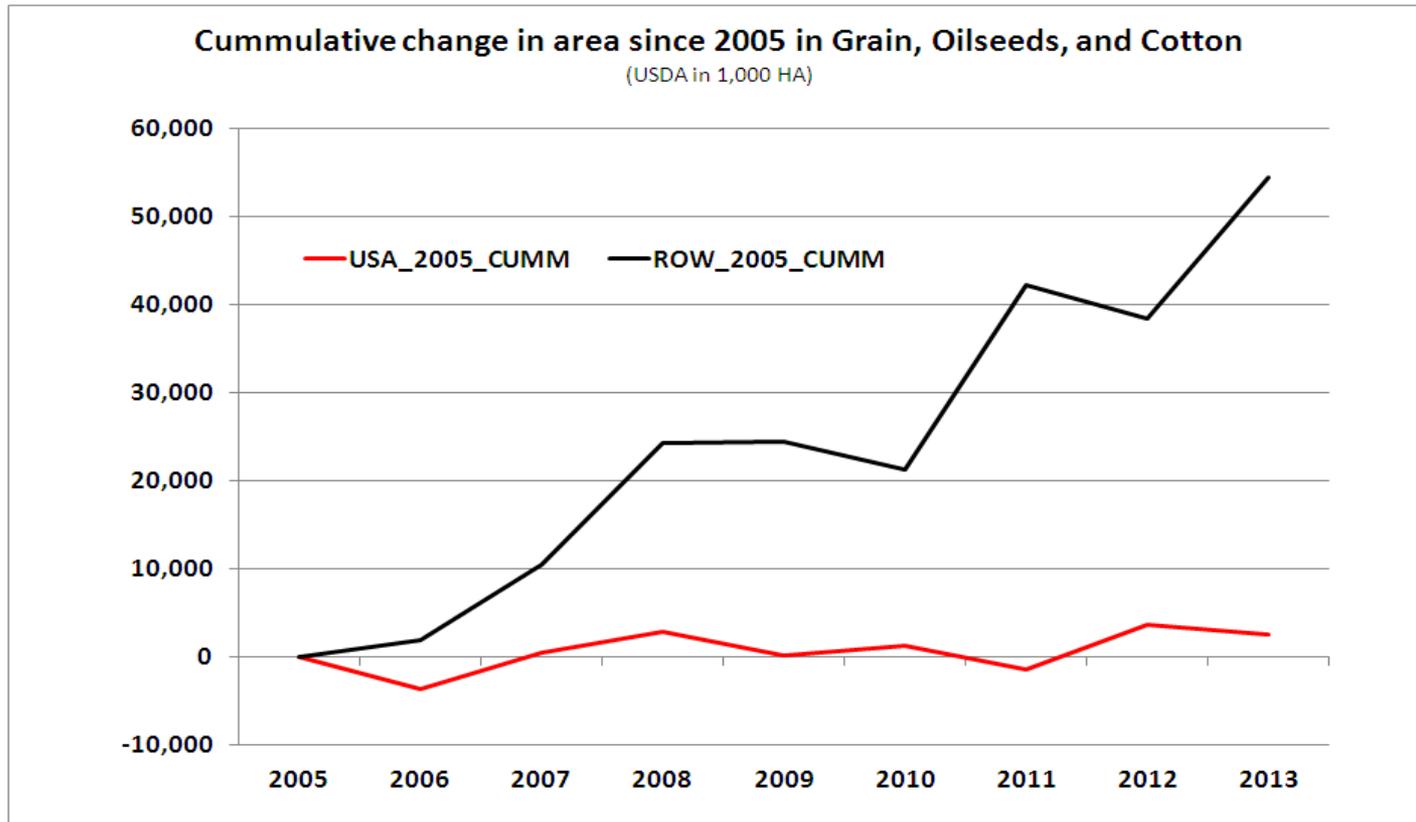
# CROP AREA LONG TERM PERSPECTIVE

Planted area in HA of Corn, Wheat, Rice, Soybeans, Barley, Rye, Oats, Millet, Sorghum, Mixed Grains, Rapeseed, Peanuts, Sunflowers, and Cotton.



**USA share of global area of these major crops steadily declined since the 1980 Grain Embargo**

# CROP AREA SINCE BIOFUELS INFLECTION



**While the USA accounts for 10.5% of global planted area, it has been only 4.6% of growth since 2005.**



# THE CHALLENGE OF FEEDING THE WORLD?

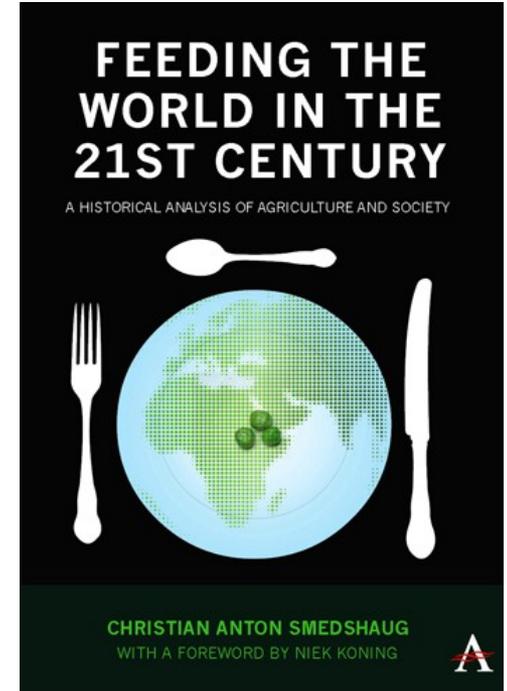
...just how big is it?



**FEEDING THE WORLD SERIES**  
ASIA | AFRICA | EUROPE



A photograph of Bill Goldberg, a professional wrestler, tearing through a metal barrier with his hands. He has a determined and intense expression, with his mouth open as if shouting or exerting effort. The background is a dark, textured red.



# CHALLENGE OF FEEDING THE WORLD

2 primary tenets of argument on Supply Side

1. Lack of arable land
2. Declining crop yield growth

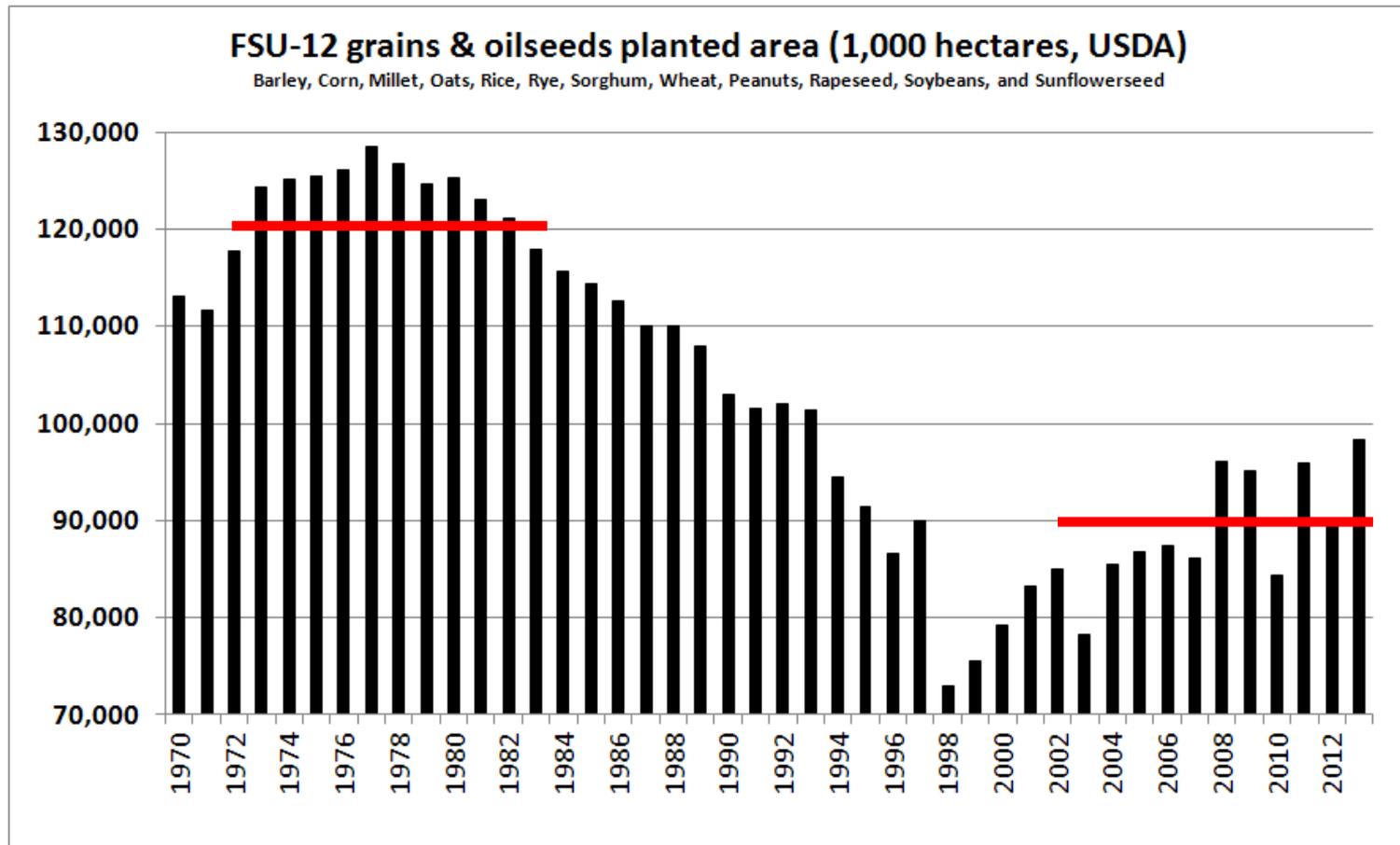
# FARMLAND: “THEY AIN’T MAKING ANYMORE OF IT”

...or are they?



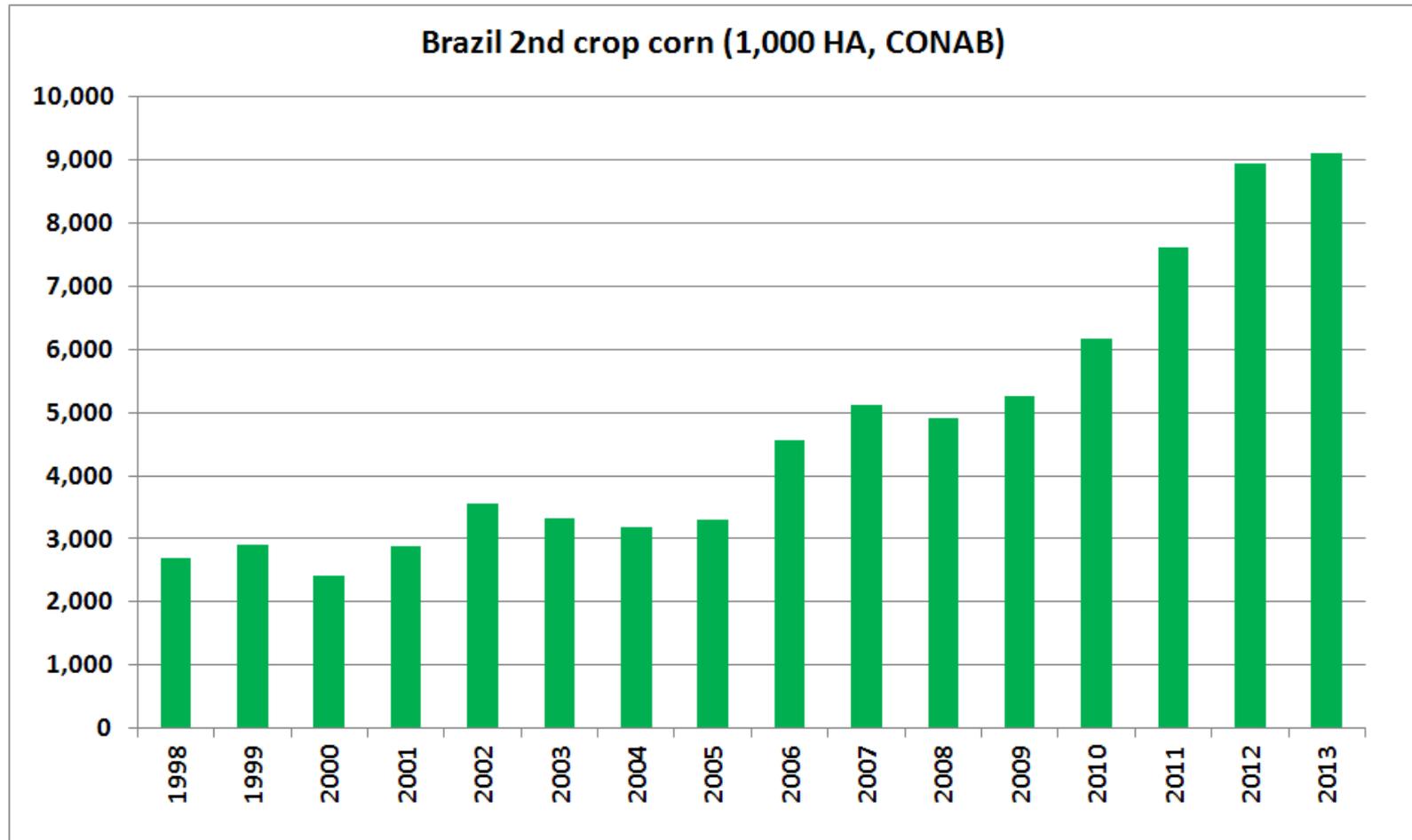
# FORMER SOVIET UNION CROP AREA 30 MIL HA OFF PEAK

...a bit more than 74 million acres, about the USA soybean planted area.



# BRAZIL DOUBLE CROP CORN AREA

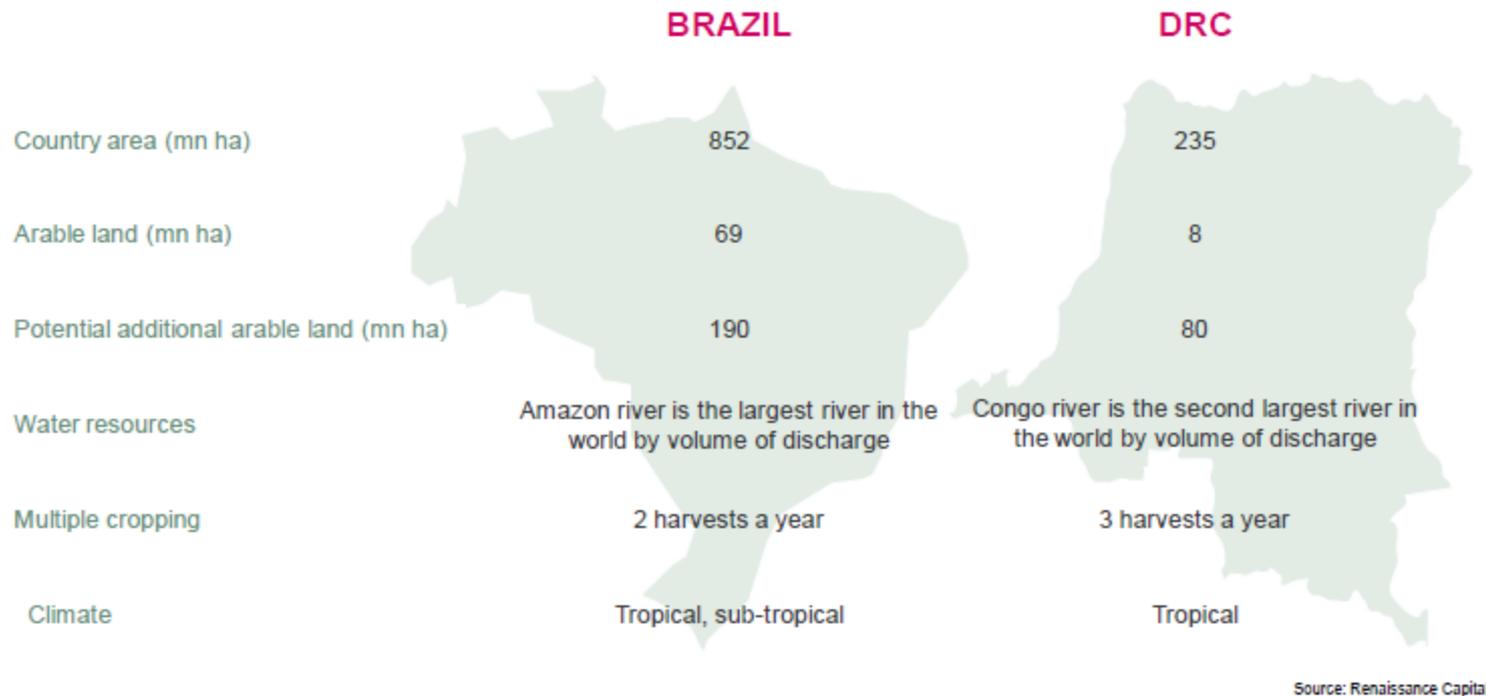
...5.9 mil HA (14.6 mil acres) increase from 2004, about size of Iowa corn area.



# ARABLE LAND BASINS NOT ON RADAR

Democratic Republic of the Congo: “In common with several other African countries, we see the DRC becoming a major food supplier in the years ahead: its development potentially mirroring that of Brazil in the 1970s.” Renaissance Capital, 2011

Figure 22: Comparison of DRC and Brazil





# YIELD GROWTH CANNOT KEEP UP WITH DEMAND

...or can it?

## Decline in crop yields expected to continue in next decade



Karl Burkart • January 14, 2013



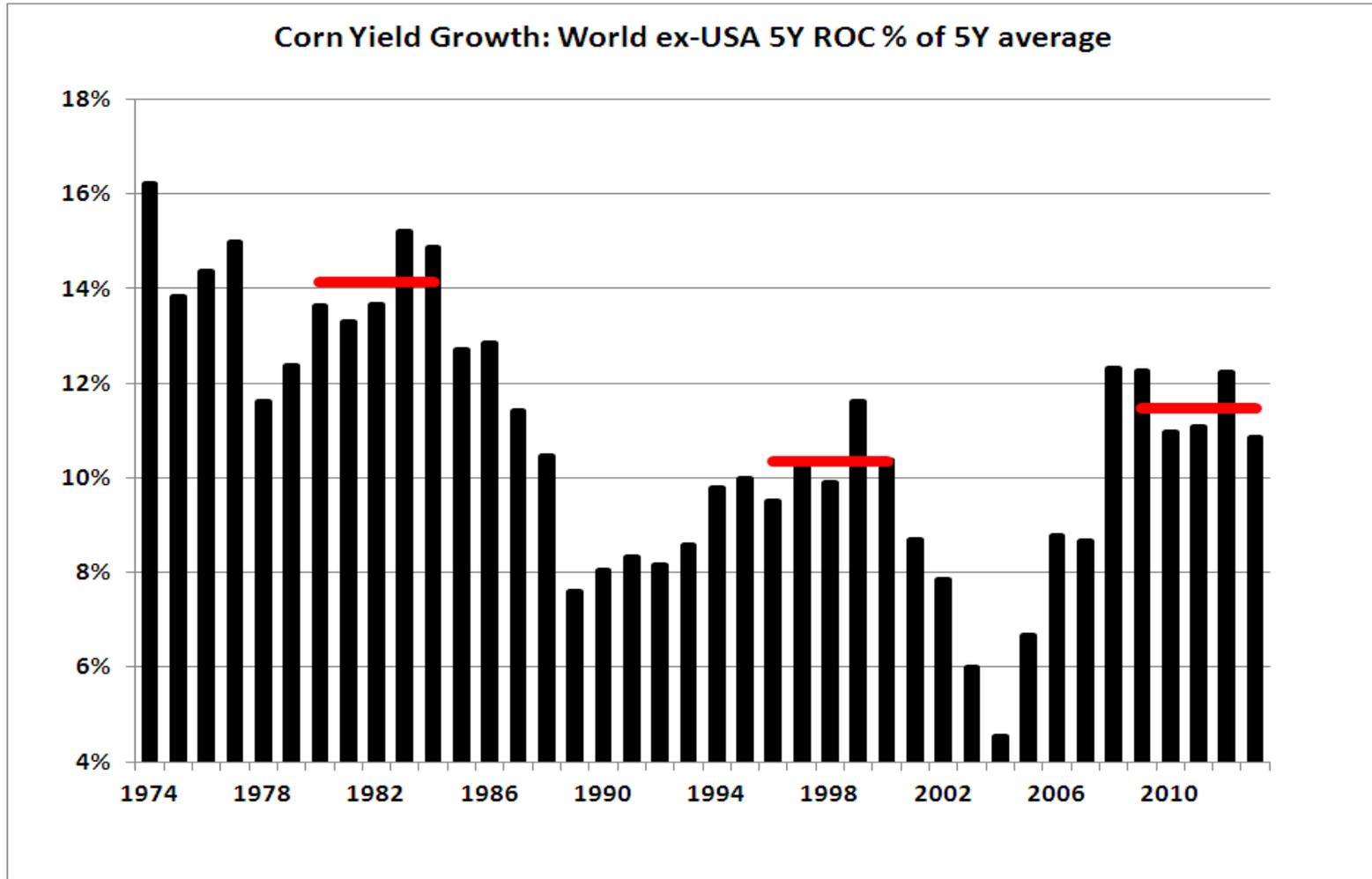
*Dry cornfield, Creative Commons: Cathy Haglund, 2009*

New research is adding to the growing body of literature documenting how a **warming climate will hurt food production** and security. Researchers from the UK predict that the increased likelihood of severe heatwaves caused by climate change will cause **agricultural yields to drop**, exacerbating the global food crisis.

# ENVISIONING TOMORROWS AG MARKETS

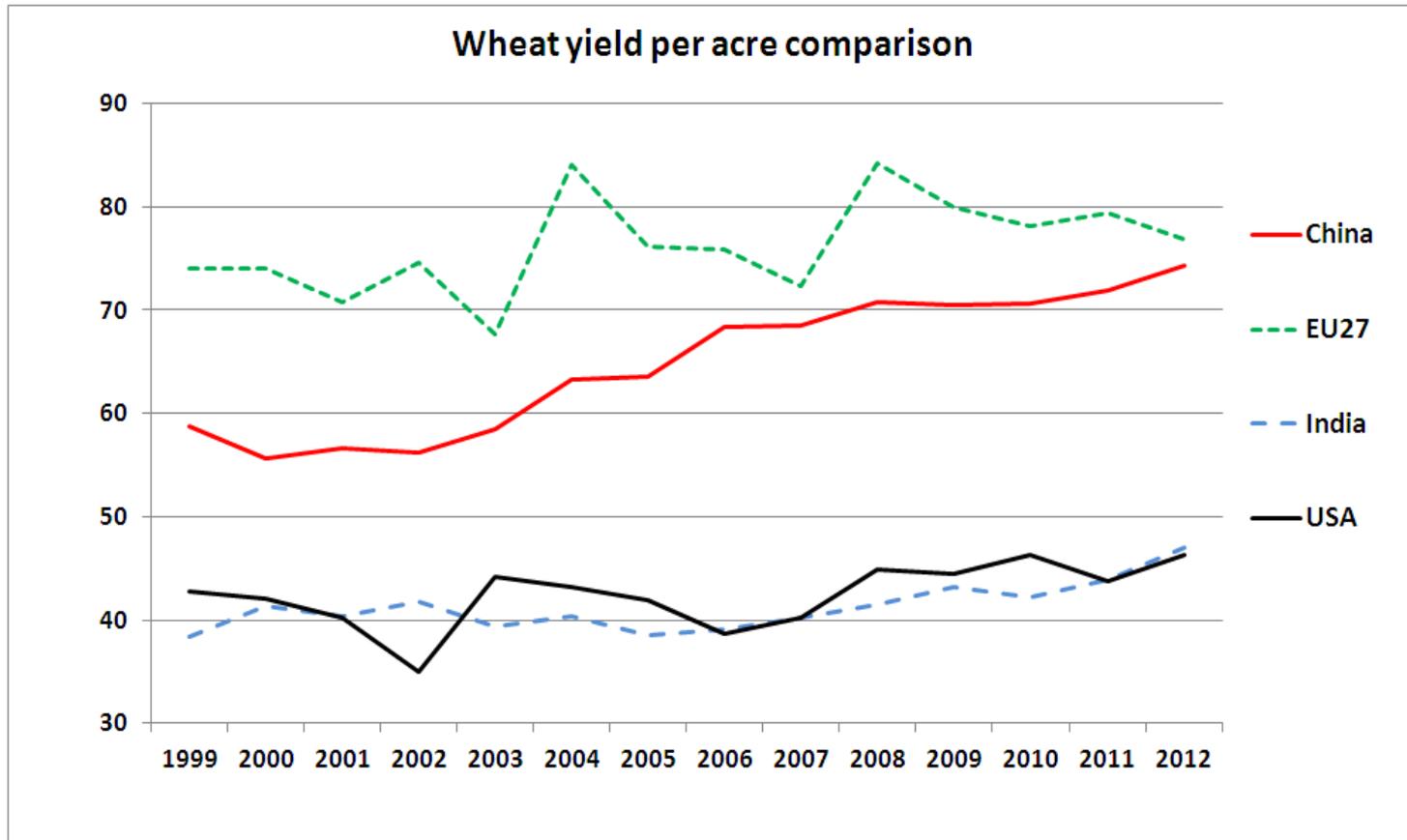
- Declining Yield Growth?
- The Leverage of modern crop varieties and farming practices globally.
- Crop portfolio optimization: new varieties not about “in situ” yield growth

# DECLINING YIELD GROWTH: NOT EX-USA



# USA HAS MOST FERTILE LAND IN WORLD?

...GMO neutral comparison would suggest not.

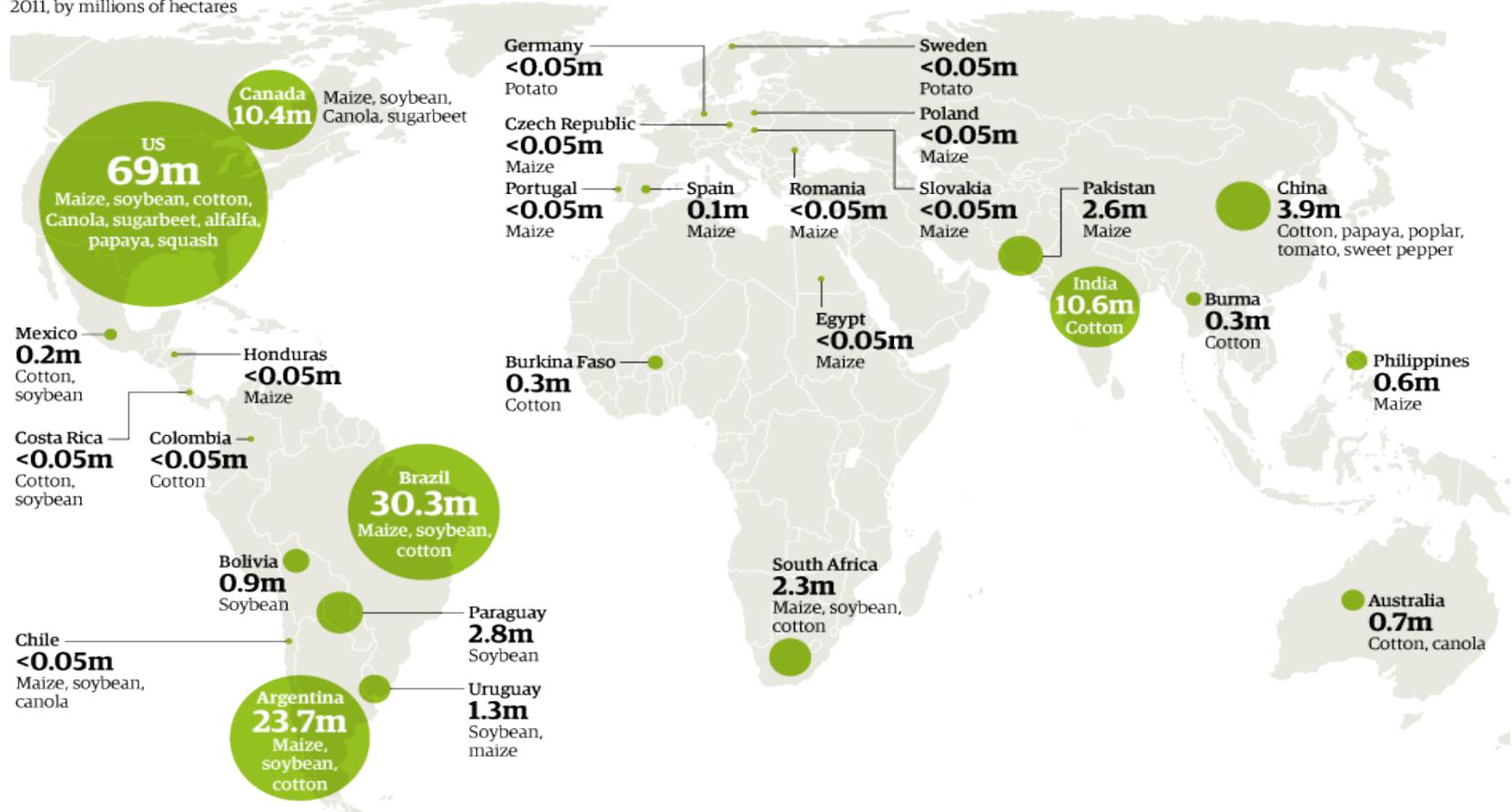


# GMO UTILIZATION: MOSTLY THE AMERICAS

...

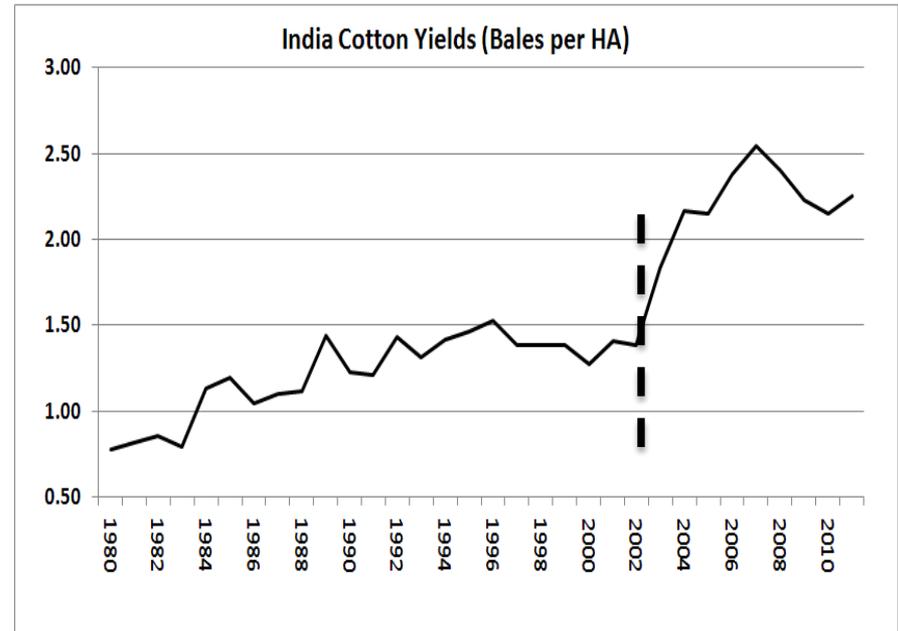
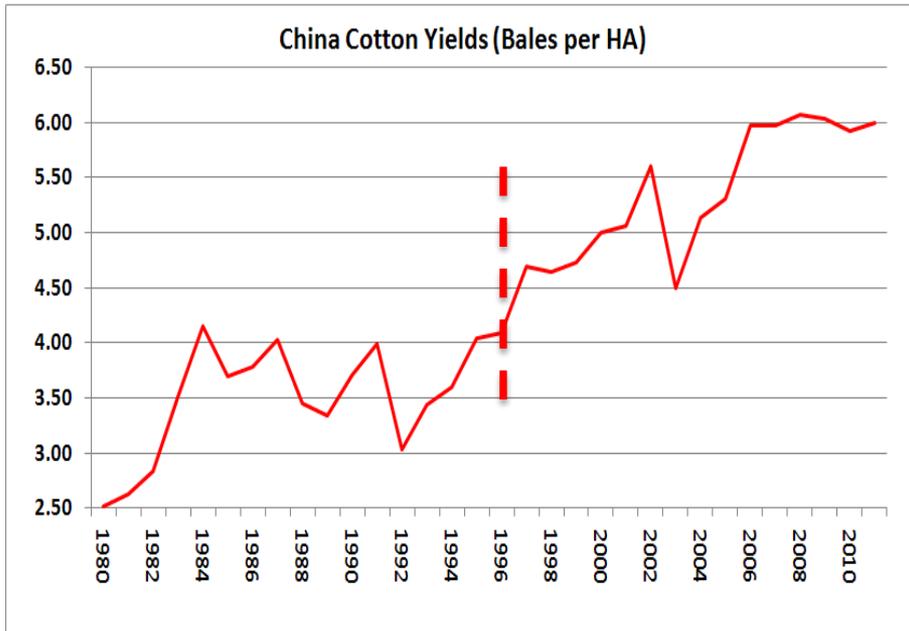
## Global status of commercial GM crops

2011, by millions of hectares



# PRIOR YIELD INCREASES DUE TO GMO USE

...BT Cotton in China and India



**1996 BT Cotton into China; yields increase from 3.5 - 4.0 bales/HA to 5.0 - 6.0.**

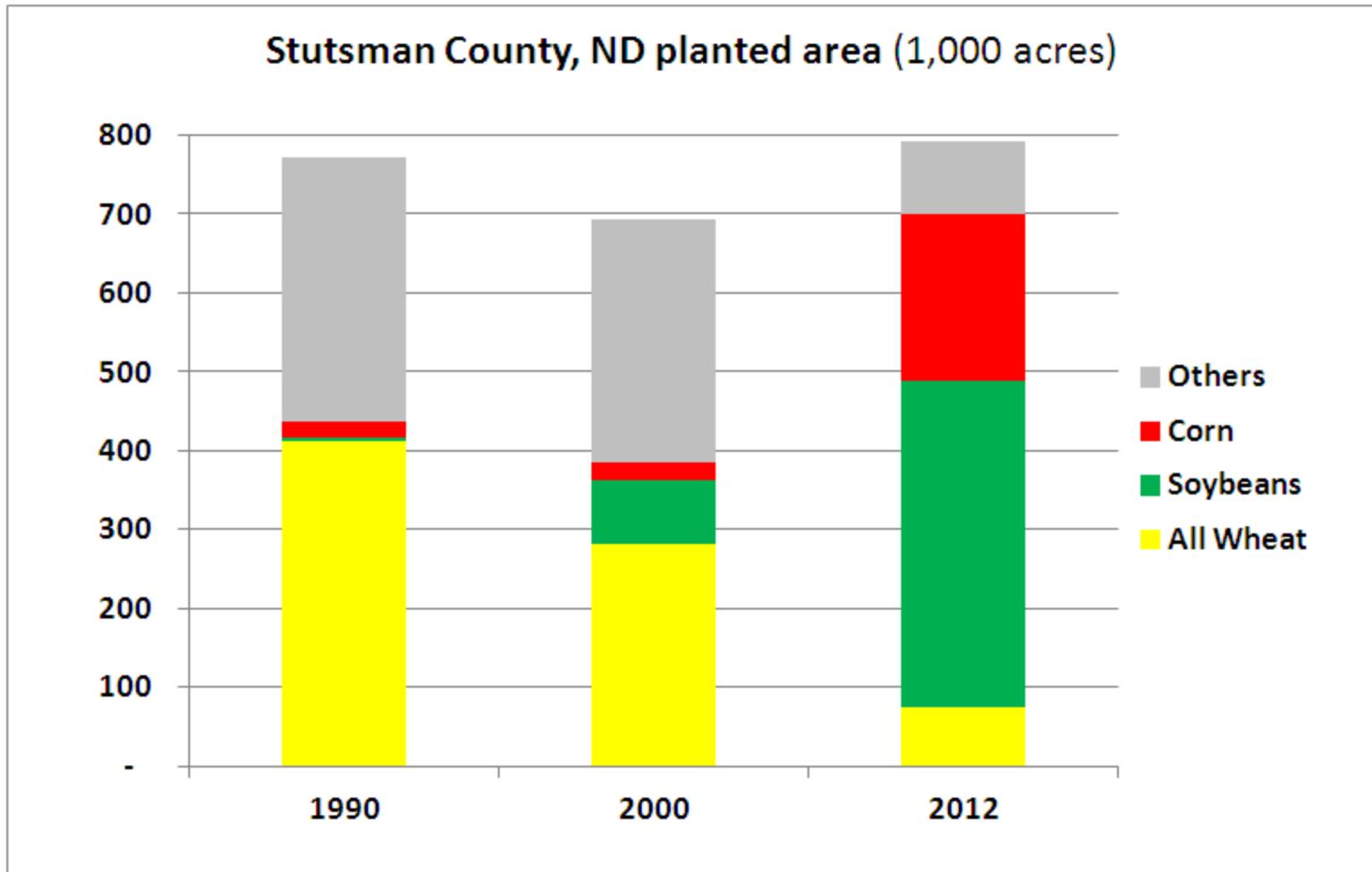
**40-50% gain**

**2002 BT Cotton into India; yields increase from 1.2 - 1.4 bales/HA to 2.2 - 2.4.**

**70-80% gain**

# MODERN CROP VARIETIES NOT JUST ABOUT YIELD INCREASE

...also allows higher value / more feed intensive cropping in new areas



# NOT JUST SOYBEANS: CORN IN W. CANADA?

## Manitoba Co-OPERATOR

NEWS & OPINION    MARKETS    PRODUCTION    COUNTRY CROSSROADS

### Monsanto to spend \$100M on Prairie corn over 10 years

Posted Jun. 24, 2013

Seed developer Monsanto said on Monday it will spend \$100 million over the next 10 years on breeding corn for Western Canada — a move it said might change the crop makeup in a fertile region that produces big harvests of spring wheat and canola.

Monsanto said it would focus on producing corn that matures earlier than current varieties, making it a seeding option for an area of Western Canada spanning 26 million acres.

Factoring in farmers' crop rotations, corn may annually occupy eight million to 10 million acres of Western Canada by 2025, Monsanto said.

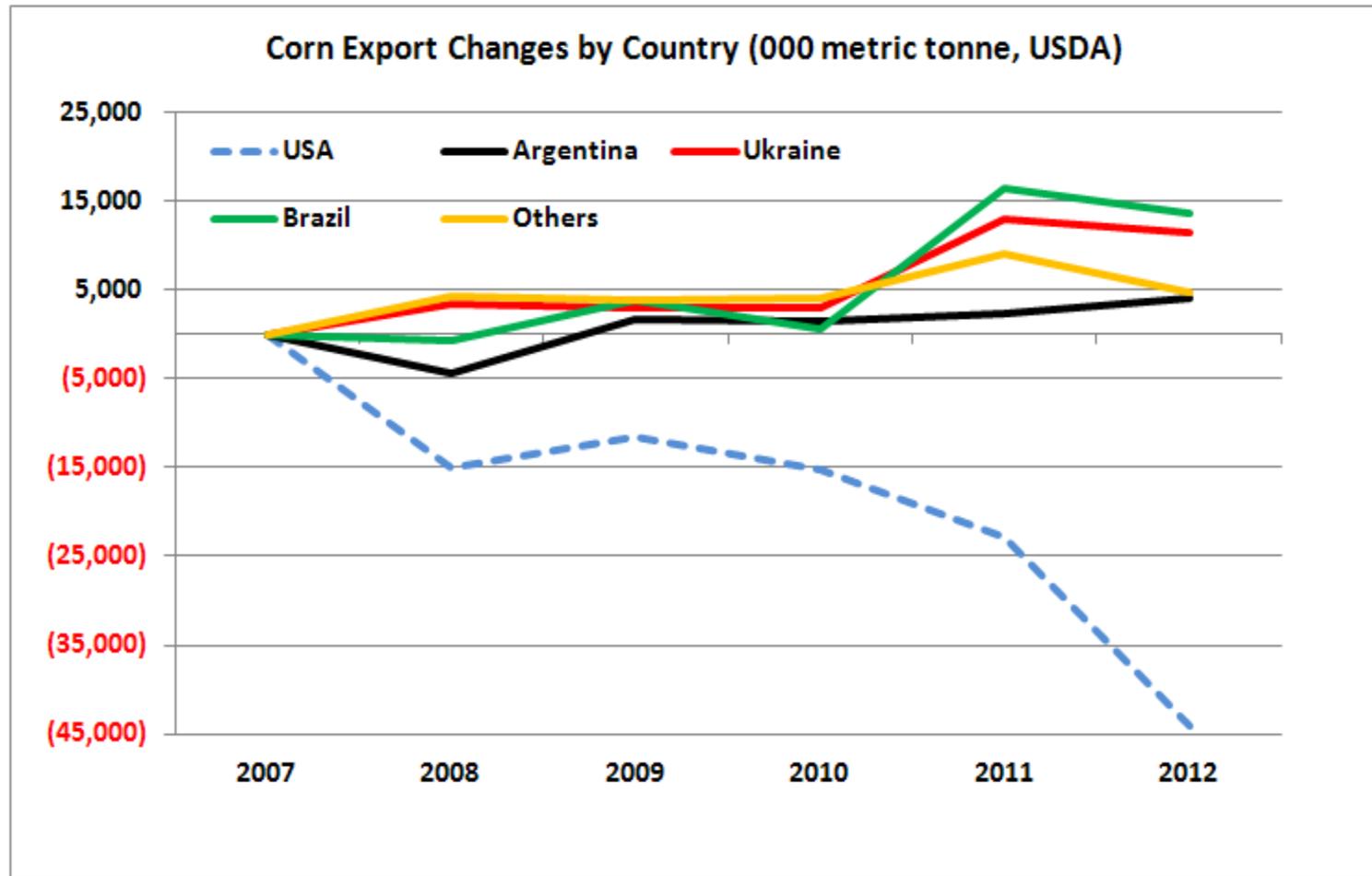
- Or possibly double crop corn in the Southern USA?
- 3 corn crops per year in Mato Grosso or similar latitudes globally; Indonesia & Malaysia, Angola, Zambia, The DRC, and Tanzania



# IMPLICATIONS FOR USA AGRICULTURE

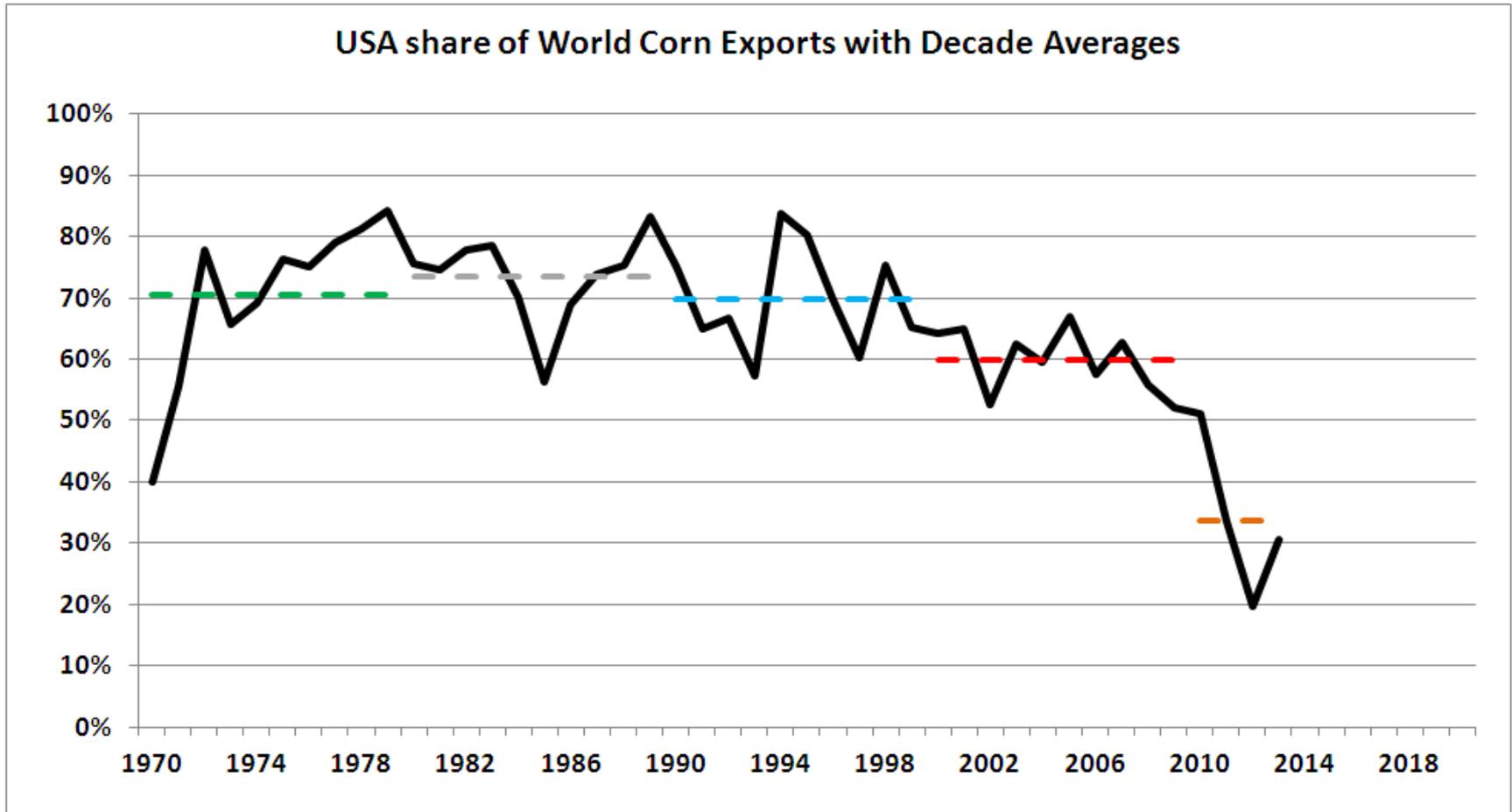
- You are going to miss me when I am gone: export markets.
- Storehouse and surge supplier to the rest of the world.
- New price regime.

# CORN EXPORT CHANGES SINCE 2007



# THE TREND IS NOT YOUR FRIEND

...Long term perspective on USA market share of corn exports



# IDEAL FACTORS FOR GRAIN STORAGE

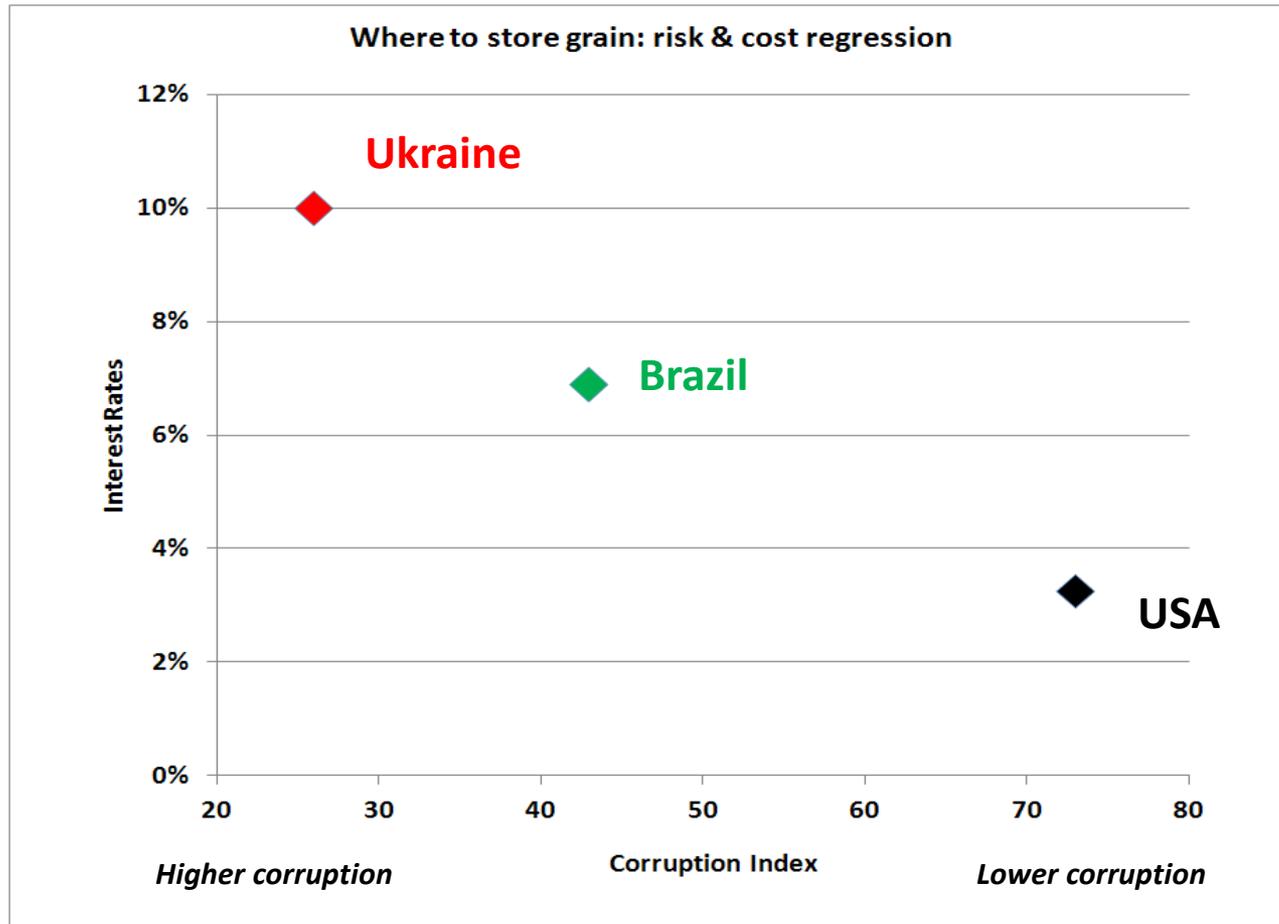
- Robust storage assets to maintain quality
- Efficient infrastructure to move crop to market in rapid low cost manner
- Low cost of capital to finance inventory storage
- Rule of law / low corruption to reduce risk of theft or export ban

# IDEAL FACTORS FOR GRAIN STORAGE

- Robust storage assets to maintain quality
  - *Difficult to benchmark in unbiased manner, but USA clear leader*
- Efficient infrastructure to move crop to market in rapid low cost manner
  - *Brazil issues are clear this year with 60+ day port lineups and freight from Mato Grosso to port above \$150/tonne (\$4/bu)*
- Low cost of capital to finance inventory storage
  - *clear benchmarks from the capital markets*
- Rule of law / low corruption to reduce risk of theft or export ban
  - *Transparency International Corruption Perceptions Index*

# WHERE BEST TO STORE GRAIN?

...rule of law country with cheaper cost of money and good infrastructure

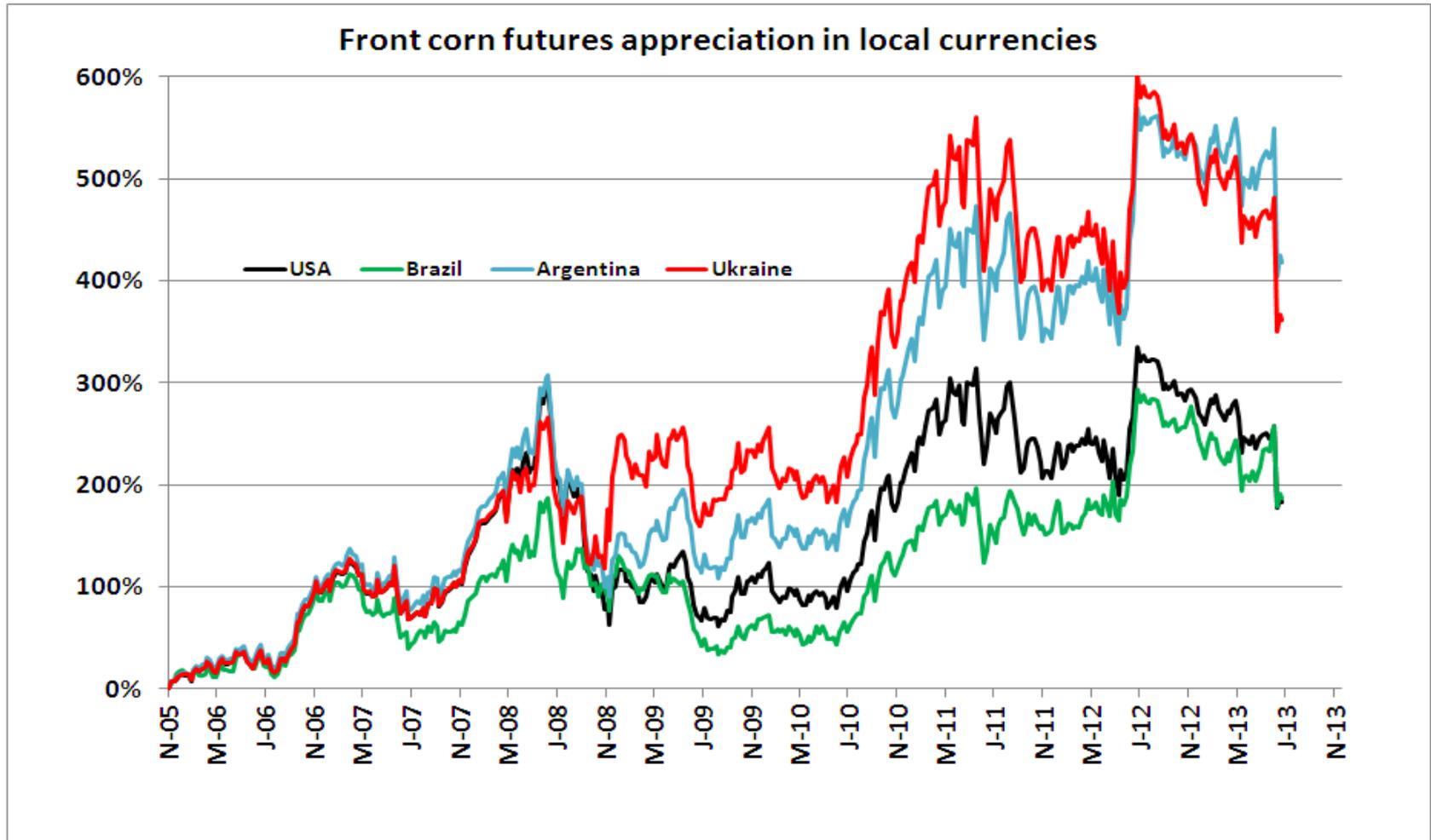


# PRICE MODERATION HAS BEGUN

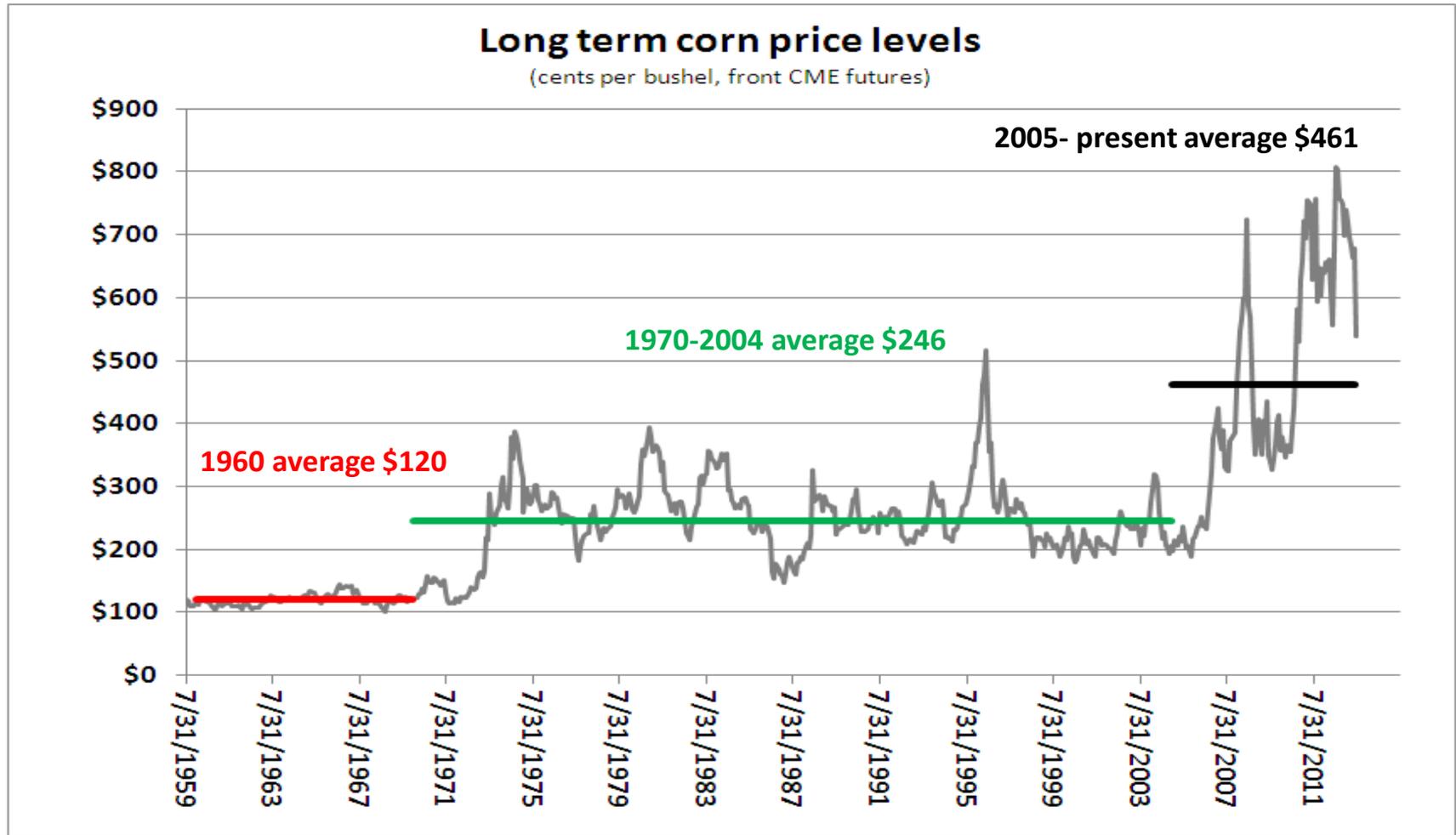
- Weaker currencies of our corn export competitors
- Mutes signal of lower prices to temper supply
- New price regime sets in

# WEAKER FX RATES HELP OUR CORN COMPETITORS

...front corn prices dramatically higher in Ukraine & Argentine local currencies



# LONG TERM CORN PRICE REGIMES



# **SUMMARY**

## **ENVISIONING TOMORROW'S AG MARKETS**

- Where are we and how did we get here?
  - + *Prices of crops and land are quite high, and likely to setback and moderate at levels lower than current.*
- The Challenge of Feeding the World?
  - + *Productive land is available, either idled, not yet in production, or via double cropping.*
  - + *GMO & modern farming practices have huge untapped leverage to raise production outside of the Americas.*
- Implications for USA Agriculture
  - + *Likely becomes the storehouse to world, and surge supplier in times of need.*
  - + *Price moderation has begun at a new plateau, which will pose challenges for land values.*

**GAVILON**

*Thrive On*

