

# Unit 5: Agricultural Geography

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Day 7: The Green Revolution and Organics

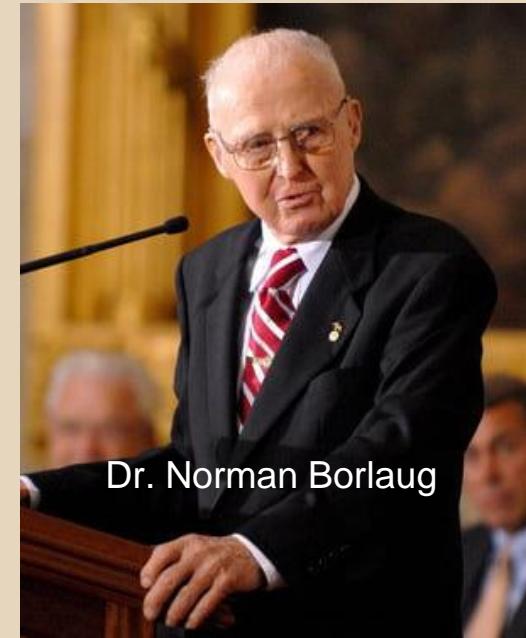
# The Green Revolution (3rd Ag. Rev)

started in the 1950's to develop higher yielding strains of wheat

diffuses to LDC's in the 1970's

## Major effects

1. The Science of Agriculture
  1. Hybrid seeds
  2. dev. of new fertilizers and pesticides
2. Diffusion to LDC's
  1. Machinery, seeds, fertilizers/pesticides



Dr. Norman Borlaug

Environmentalists have speculated about the potential for disease-resistant plants to spur the evolution of super-pests.

Mono-cropping can make farms vulnerable to changes in climate or the infestation of particular pests.

Higher inputs of chemical fertilizers, herbicides, and pesticides associated with Green Revolution agriculture can lead to reduced organic matter in the soil and to groundwater pollution.

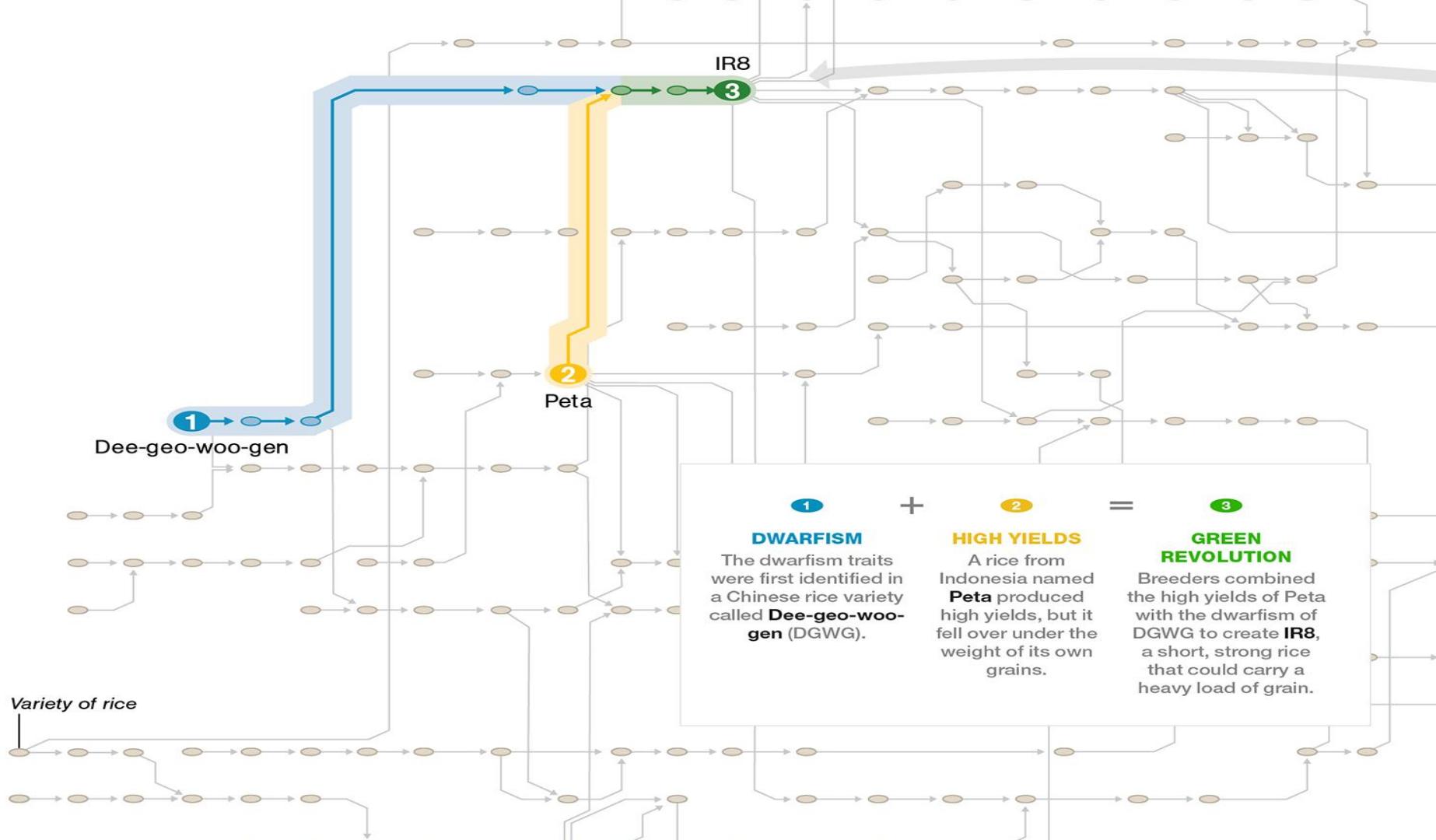
› *Scientific American* (2005) explains that the Green Revolution has done little to alleviate poverty in areas where most farmers still work small plots of land.

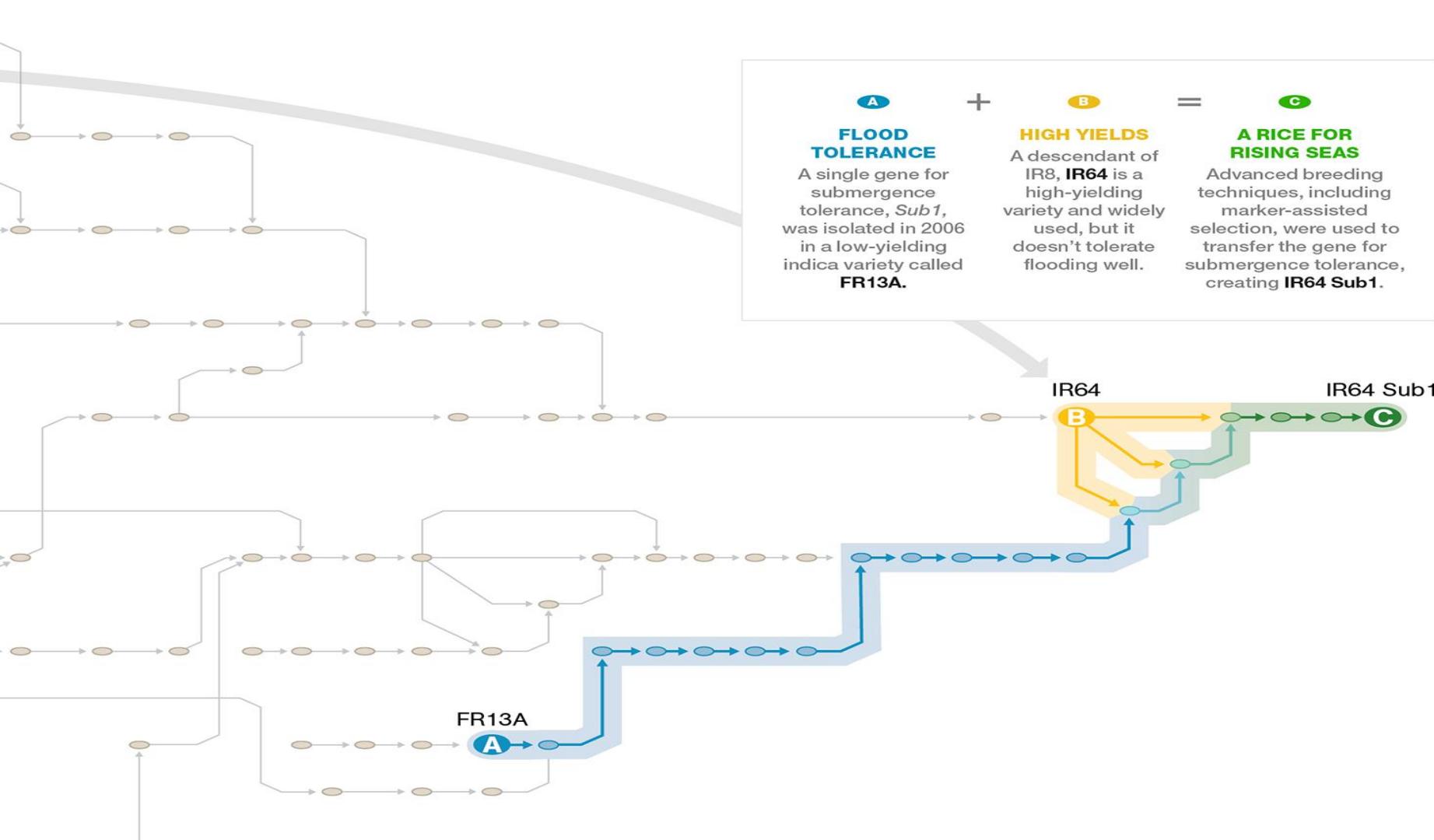
› The need for capital from the West to implement Green Revolution technologies has led to a shift away from production for local consumers toward export agriculture.

- **Genetically modified organisms (GMOs)** are found in 75 percent of all processed foods in the United States
- Many of the poorer countries of the world do not have access to the necessary capital and technology.
- Ideological resistance to genetically engineered foods
- In regions where seeds are a cultural commodity, reflecting agricultural lessons learned over generations, many resist the invasion of foreign, genetically engineered crops.





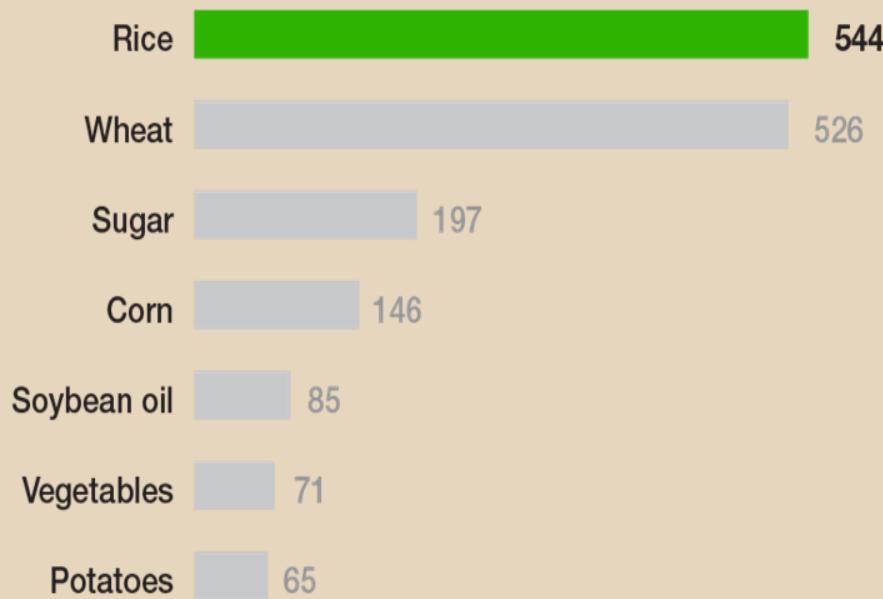




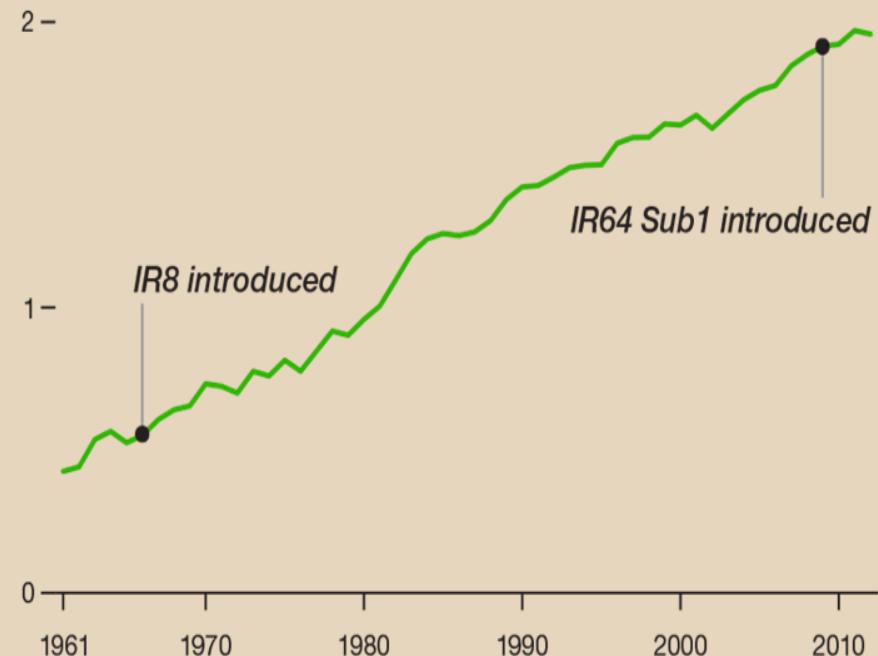
# IR8

Rice is the most important food crop in the world, providing more energy to humanity than any other food source. Rice yields have more than tripled since 1961, keeping up with Asia's growing population.

**Global Food Supply**  
kilocalories per capita



**Global Rice Yields**  
tons per acre



# Golden Rice



# Golden Rice Audio

<http://www.npr.org/blogs/thesalt/2013/03/07/173611461/in-a-grain-of-golden-rice-a-world-of-controversy-over-gmo-foods?ft=1&f=1053>

# Where did the Green Revolution have the greatest impact?

South Asia (India)

East/SE Asia (China, Indonesia, Vietnam)

Latin America (Mexico)

Why?

Due to the types of crops that were developed  
(wheat and rice)

# The Green Revolution in India



# Areas not Impacted

Sub Saharan Africa

this is due to the types of crops grown there  
(Sorghum, cassava)

\*\*although some breakthroughs are being made they are yet to yield the same results as other regions\*\*

# Reasons the Green Rev. was successful

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1. Countries had to be receptive to the new technology (Gov't and the people)
2. Farmers had to be trained/educated
3. Availability of money/loans for farmers

# Still there were/are some potential problems

1. Increased use of pesticides and fertilizers
2. New crops need more water
3. Some cultures/gov'ts may not be receptive
4. Some groups may not be able to acquire loans (women)
5. Loss of biodiversity

# Organic Agriculture

## Organic Agriculture –

The production of crops without the use of synthetic or industrially produced pesticides and fertilizers or the raising of livestock without hormones, antibiotics, and synthetic feeds.

- sales of organic foods on the rise
- grown everywhere
- demand in wealthier countries

# GMO's.....OMG

Under GM the genetic composition of an organism is altered. This is not the same as cross breeding.

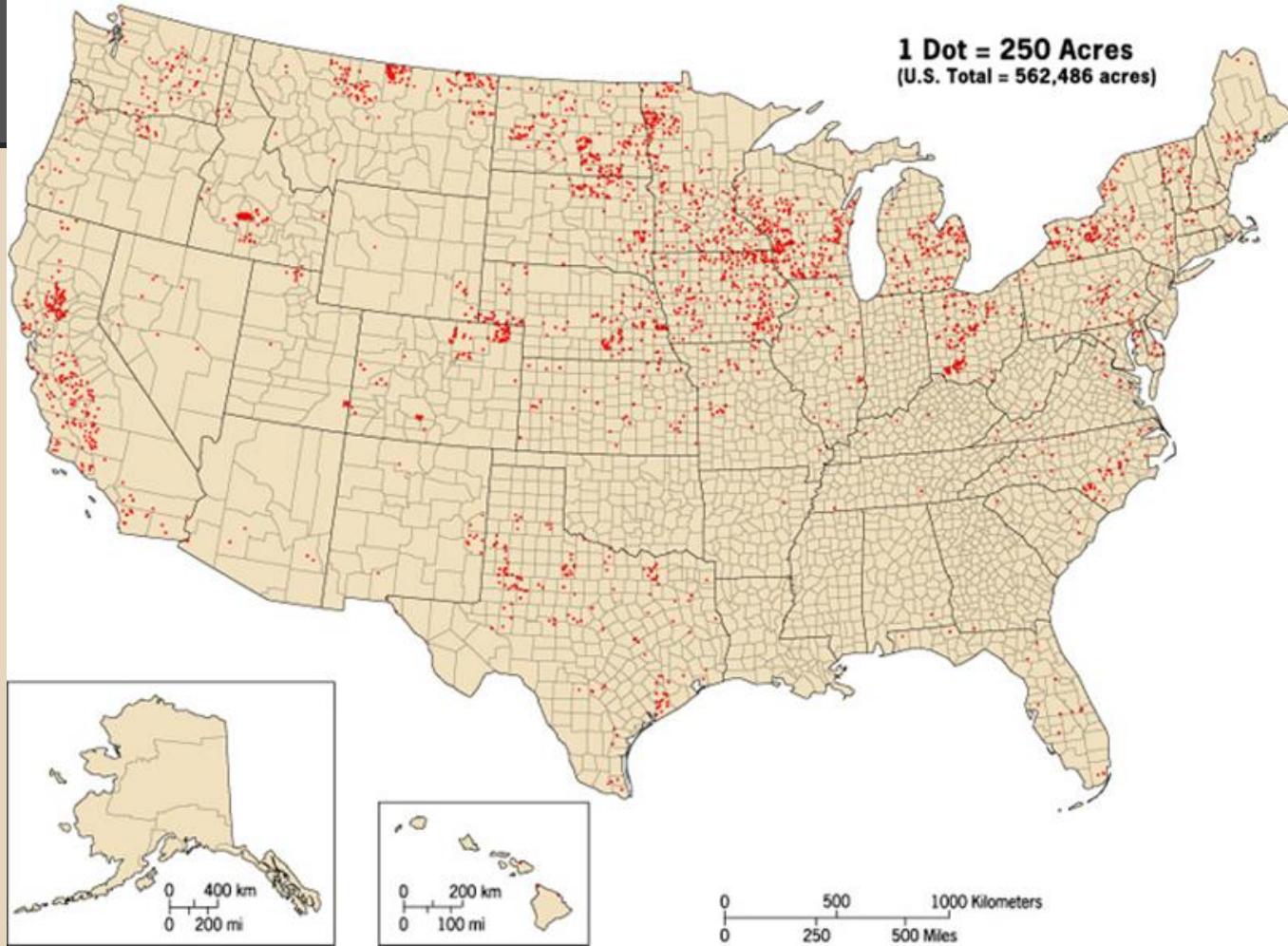
Most GMO's have been developed in the US

Pros?

Cons?



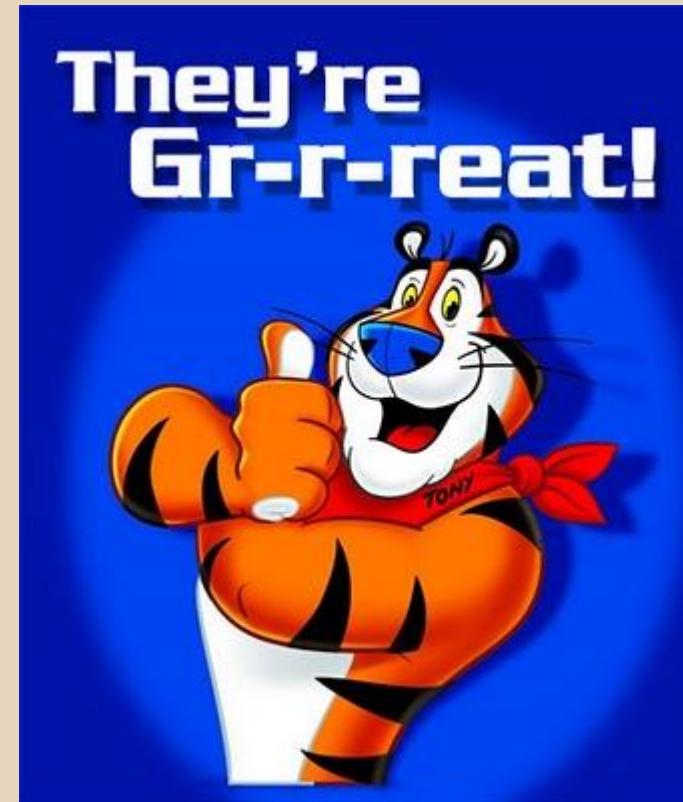
## ACRES USED TO RAISE CERTIFIED ORGANICALLY PRODUCED CROPS, 2002



# Modern Agribusiness

## Value-Added

- Very little of the value of most commercial products comes from the raw materials
- “adding value” is the key to high profit margins



## Fair Trade Coffee –

shade grown coffee produced by certified fair trade farmers, who then sell the coffee directly to coffee importers.

- guarantees a “fair trade price”
- over 500,000 farmers
- produced in more than 20 countries
- often organically produced



# Organic/local movement

Why?

What are the benefits?

So how come we all  
don't eat organic or  
buy local?



KEEP  
CALM  
AND  
GO  
ORGANIC

Use the farm cuke!

STORY  
BOARD

# Challenge of feeding everyone

Worldwide, about 1 billion people are malnourished.

Inadequate distribution systems and widespread poverty.

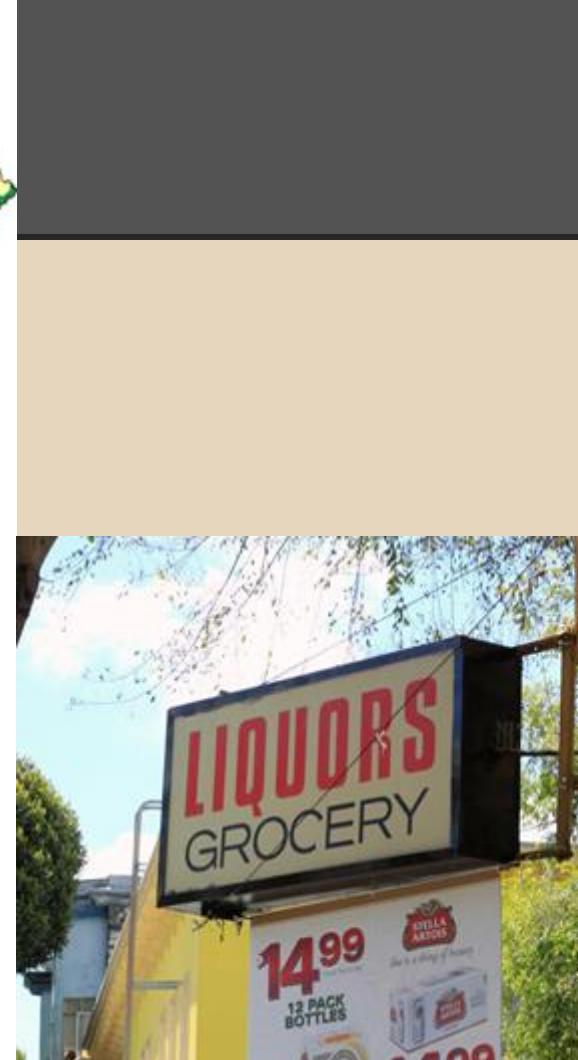
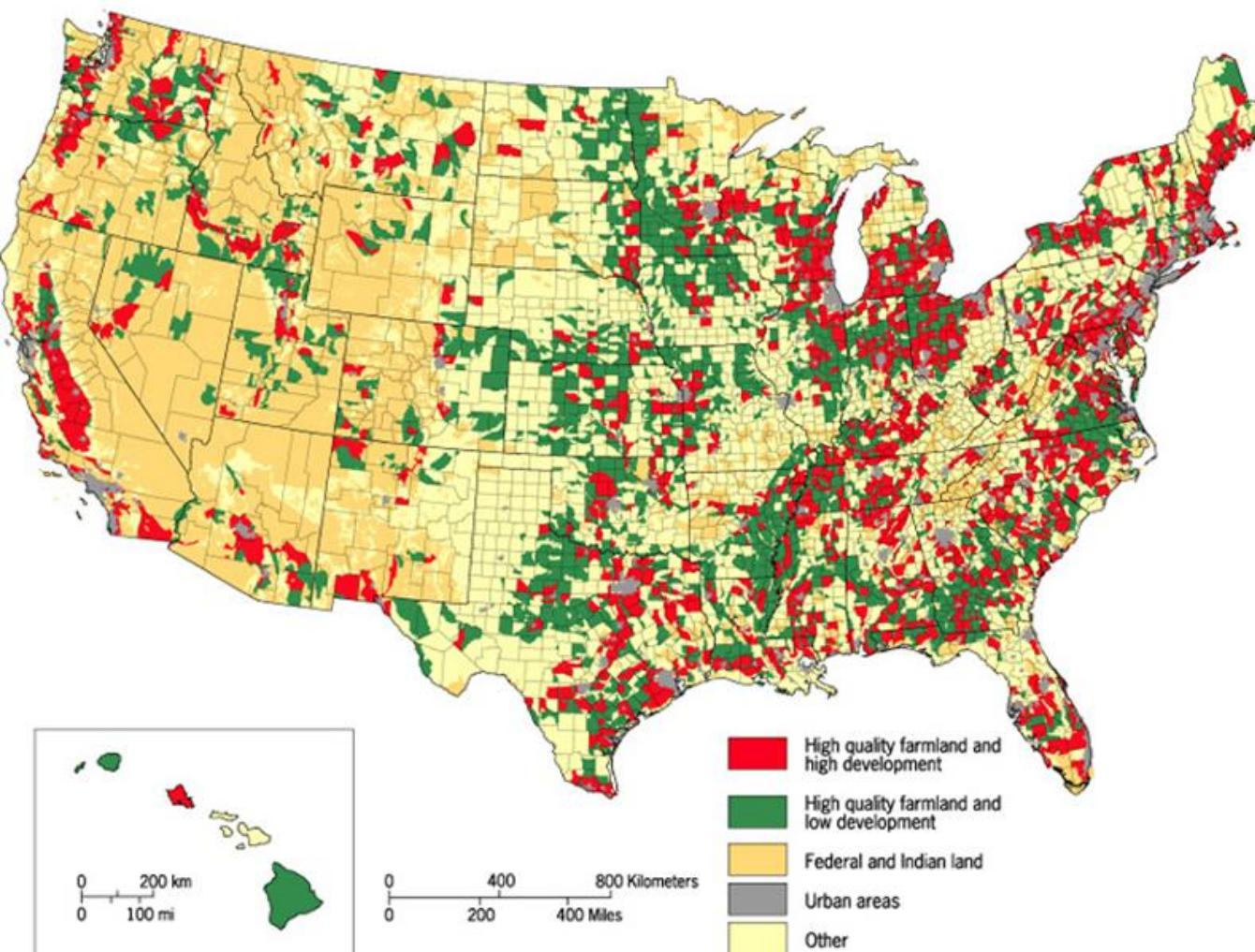
Some of the most fertile, productive farmlands are lost to housing and retail developments.

Commercial agricultural areas are converted into regions for second homes.

Population growth and the loss of agricultural land help to explain why global food prices have been on the rise for more than a decade.

**Food deserts** are areas with limited access to fresh, nutritious foods.

## HIGH QUALITY FARMLAND IN THE PATH OF DEVELOPMENT



# Solving food deserts with Gangsta Gardening

