

# Developments of Agriculture

From the First Agricultural Revolution  
to Today

# Agricultural Revolutions

- First Agricultural Revolution
  - 10,000 year ago – The initial domestication of plants and animals
- Second Agricultural Revolution
  - 250 years ago - Mechanization of agriculture with improved practices of cultivation, harvesting, and storage of farm produce.
- Third Agricultural Revolution
  - In progress – Centered around development of Genetically Modified Organisms

# Second Agricultural Revolution

- Lasted from 1700s to early 1900s
- Coincided with the Industrial Revolution
  - New technologies developed to improve crop yields
  - Produced surplus to feed factory workers
- Supported by governments of Europe
  - Ex. Enclosure Act of Great Britain



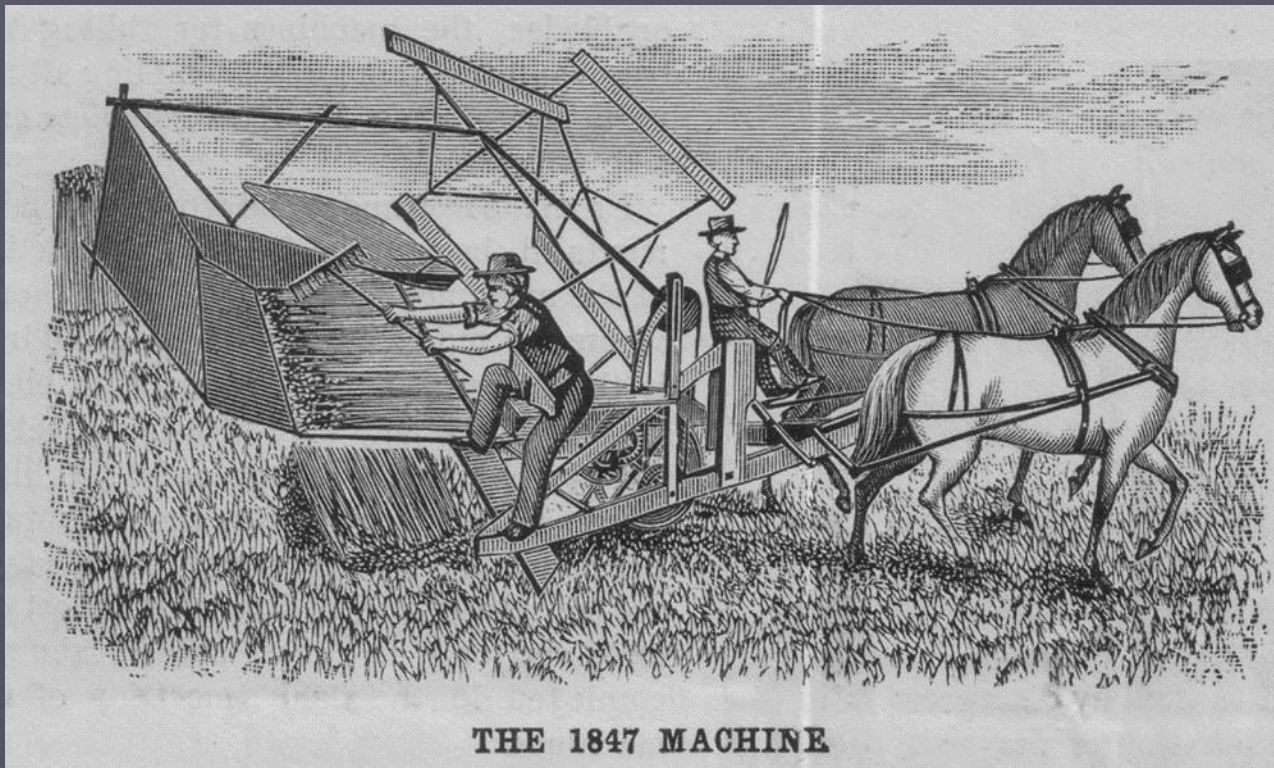
# Developments of Second Agricultural Revolution

- New fertilizer and artificial feed
- Selective breeding of livestock
- Planting of crops in rows
  - Easier to manage
  - Use of machines in planting
- Railroads decreased transportation time



# Cyrus McCormick's Reaper

- Increased harvesting speed of wheat
  - Required less people for harvest
    - Led to urbanization and smaller family sizes



# Third Agricultural Revolution

- Began in 1930s in United States
- Shift in roles of farmers
  - Primary Sector – Cultivation and harvesting of produce
  - Secondary Sector – Processing crops
  - Tertiary Sector – Marketing and advertising products

# Developments in Third Agricultural Revolution

- Increase Mechanization
  - Increasingly replacing draft animals with machines
  - Spread of Mechanization outside of United States after World War II
  - Machines get larger, more powerful, and more efficient



# Developments in Third Agricultural Revolution

- The Biotechnological Phase
  - Inorganic fertilizers and manufactured products replace manure and humus to increase soil fertility
  - Increasing use of herbicides, pesticides, and fungicides to increase yields
  - Began in United States in 1950s, spread to Europe in 1960s, and then the rest of the world in 1970s to 2000s



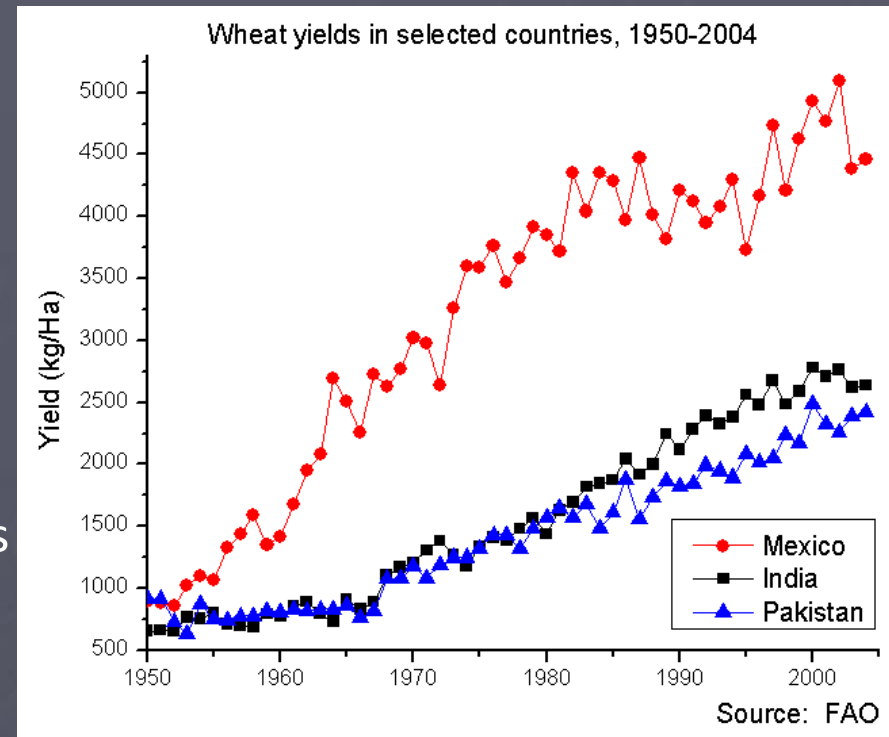
# Developments in Third Agricultural Revolution

- Agri-Business
  - Development of business side of farming resulting in branding referred to as “value added”
  - Increasing connectedness of farming and business
    - Blending of rural and urban



# The Green Revolution

- The diffusion of agricultural technologies and practices to less developed areas
  - Specifically Mexico and Asia (India)
  - First practiced in 1940s in Mexico by Rockefeller Foundation
    - Sent agricultural experts to attempt to increase wheat yields
  - Primarily associated with 1960s
    - Norman Borlaug received 1970 Nobel peace prize for helping reverse famine of India and Pakistan



# Impacts of the Green Revolution

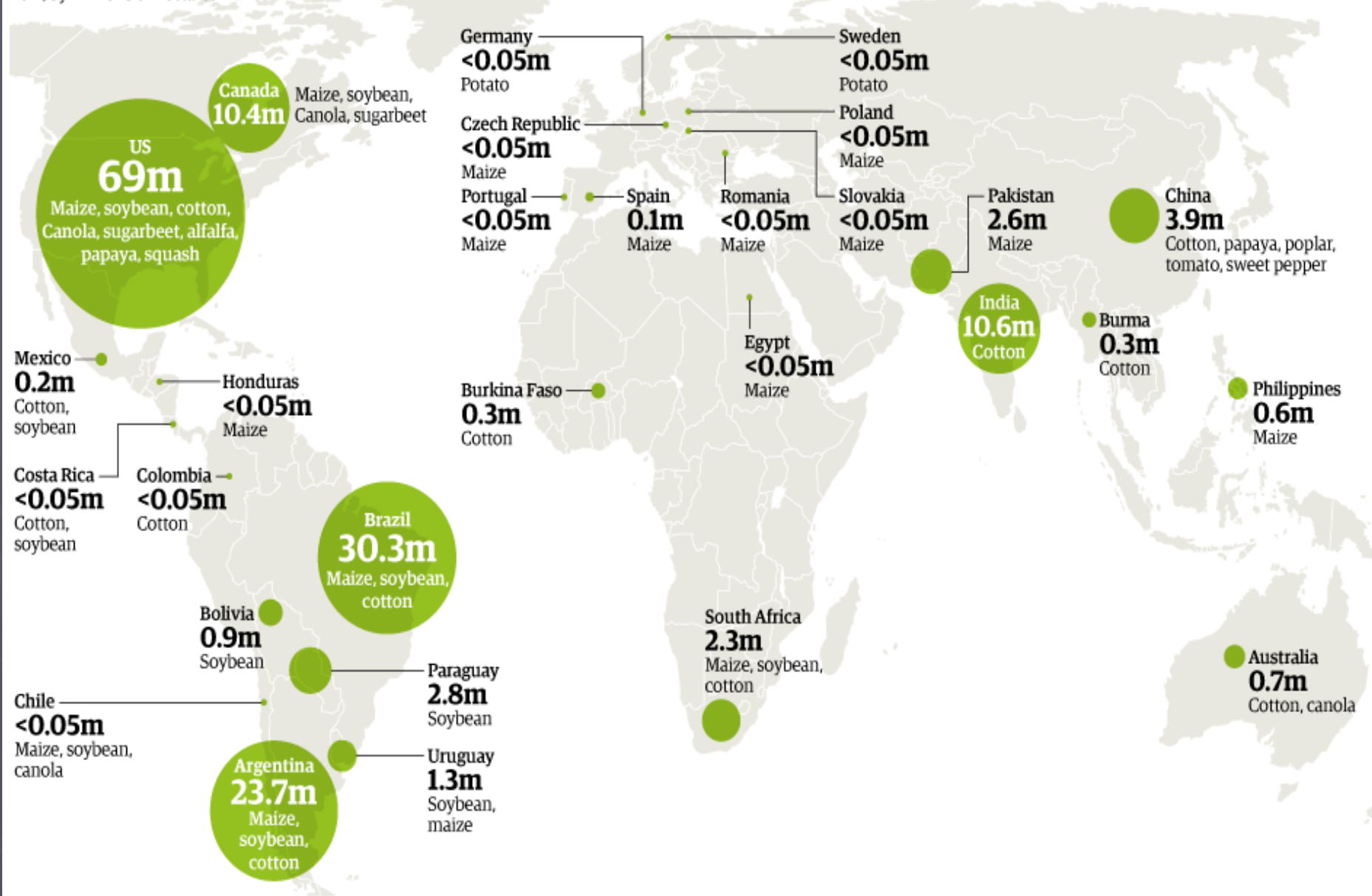
- Increased production
  - Rice production of Asia increases 66% between 1965 and 1985
  - India became self sufficient in some areas for wheat production
    - Paid back debts and became exporter of surplus
- Led to increased gaps between MDCs and LDCs
  - Areas that could not afford technology left behind
  - Lost competitiveness

# Current Agricultural Practices

- Genetically Modified Crops – Crops that carry new traits that have been inserted through advanced genetic engineering methods
- Organic Agriculture - Approach to farming and ranching that avoids the use of herbicides, pesticides, growth hormones, and other similar synthetic inputs

# Global status of commercial GM crops

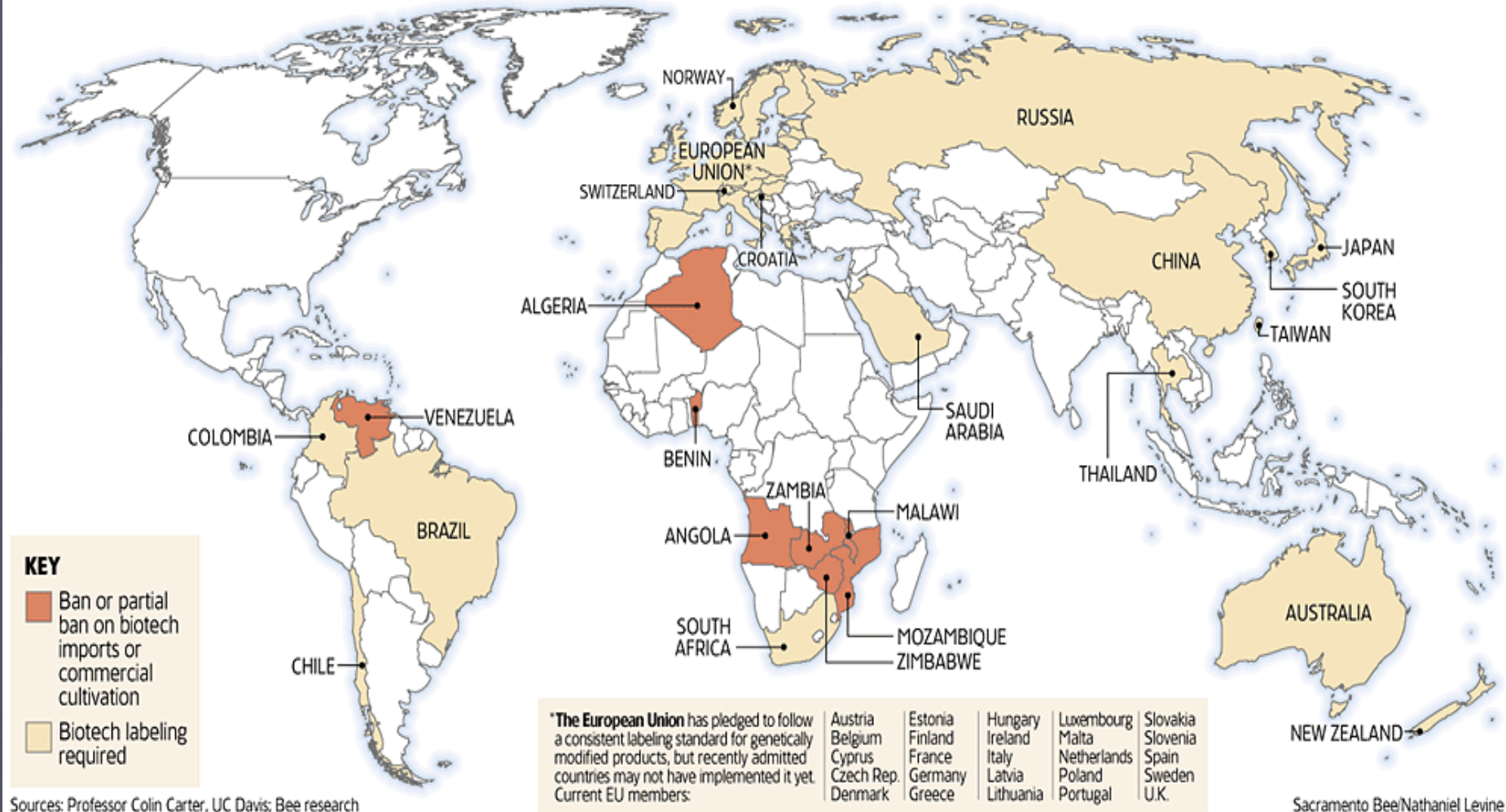
2011, by millions of hectares



# Restrictions on GMOs

## Look for the label

These countries ban or require the labeling of foods that contain biotech ingredients.



Sources: Professor Colin Carter, UC Davis; Bee research

Sacramento Bee/Nathaniel Levine