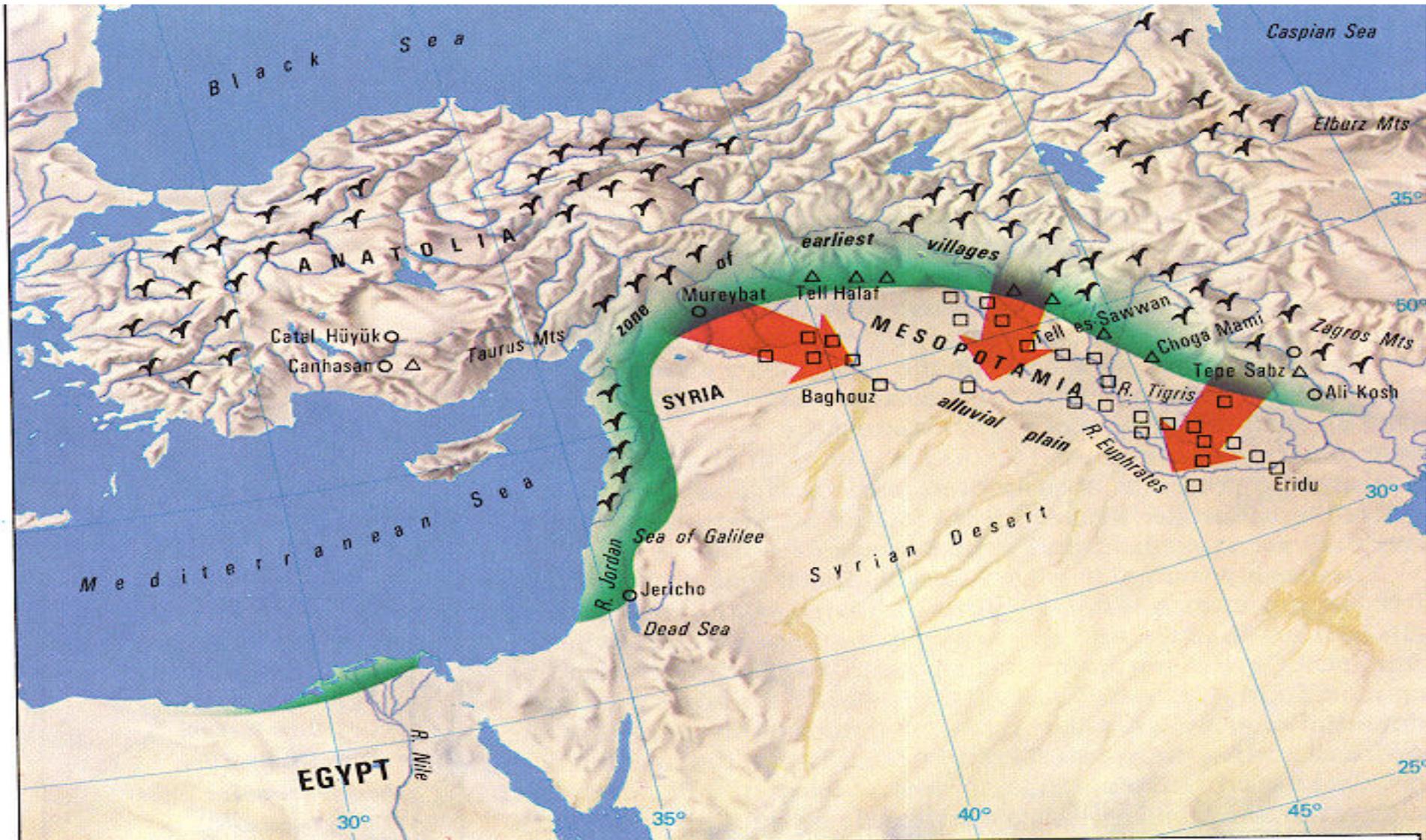




**THE FERTILE CRESCENT AND THE NILE VALLEY**

0 250 500 750 Kilometers  
 0 250 500 Miles



## 2 The agricultural revolution in the Near East

 natural habitat of wild cereals

 limit of rain fed agriculture

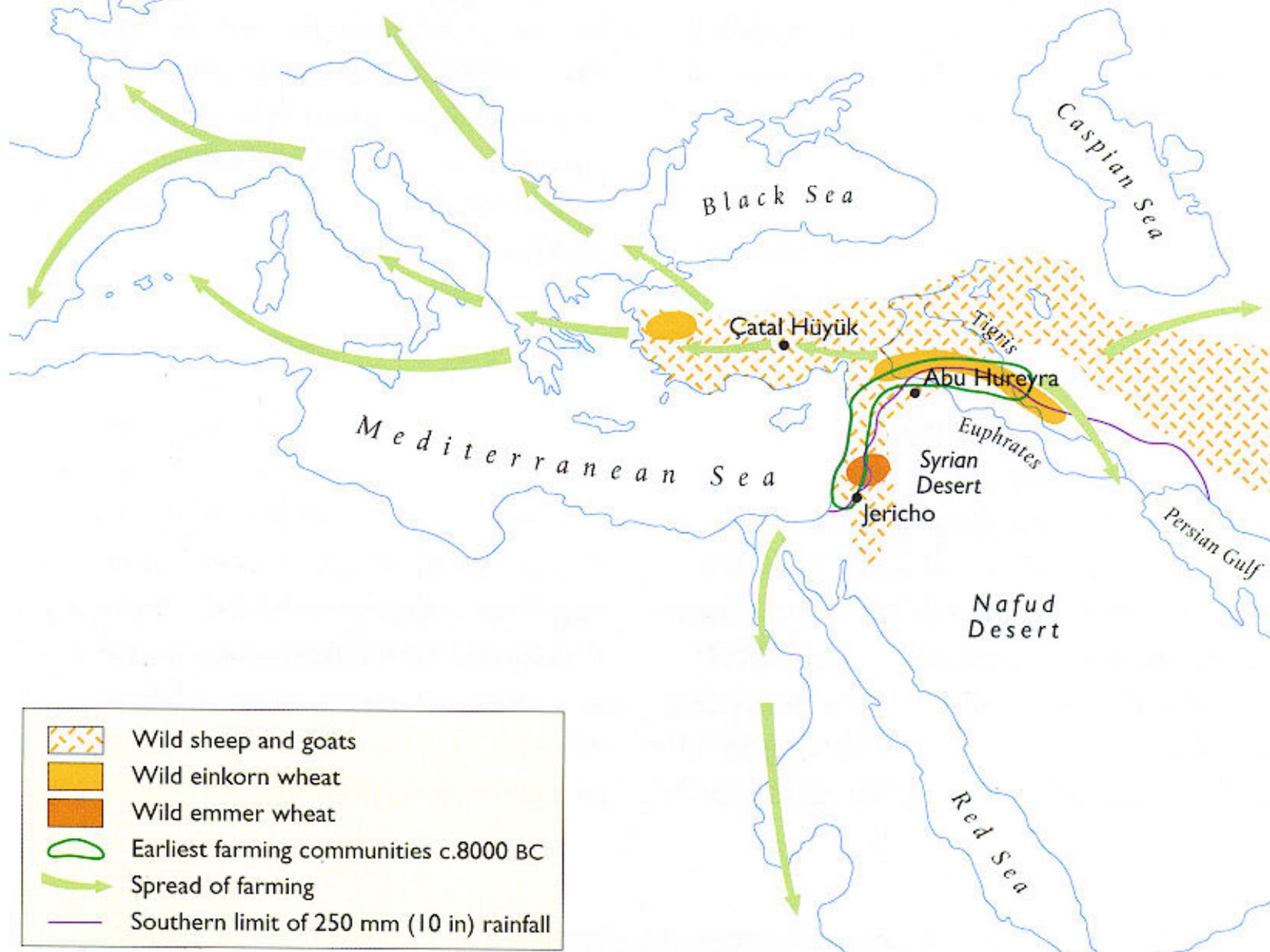
 colonisation movements into the alluvial plain  
5th, 4th millennia BC

○ earliest villages 8th to 6th millennia BC

△ formative irrigation villages 6th millennium BC

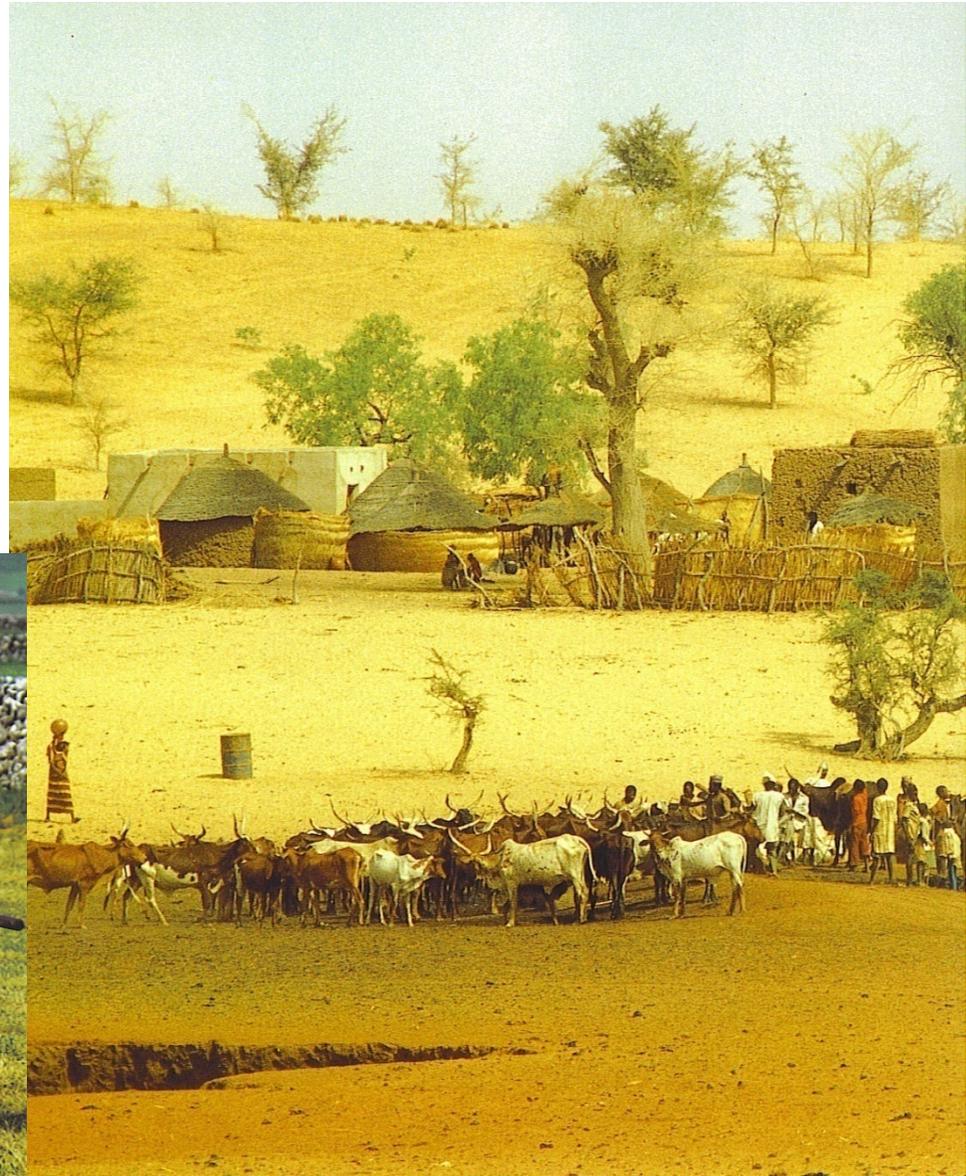
□ earliest settlements in the alluvial plains,  
5th and 4th millennia BC

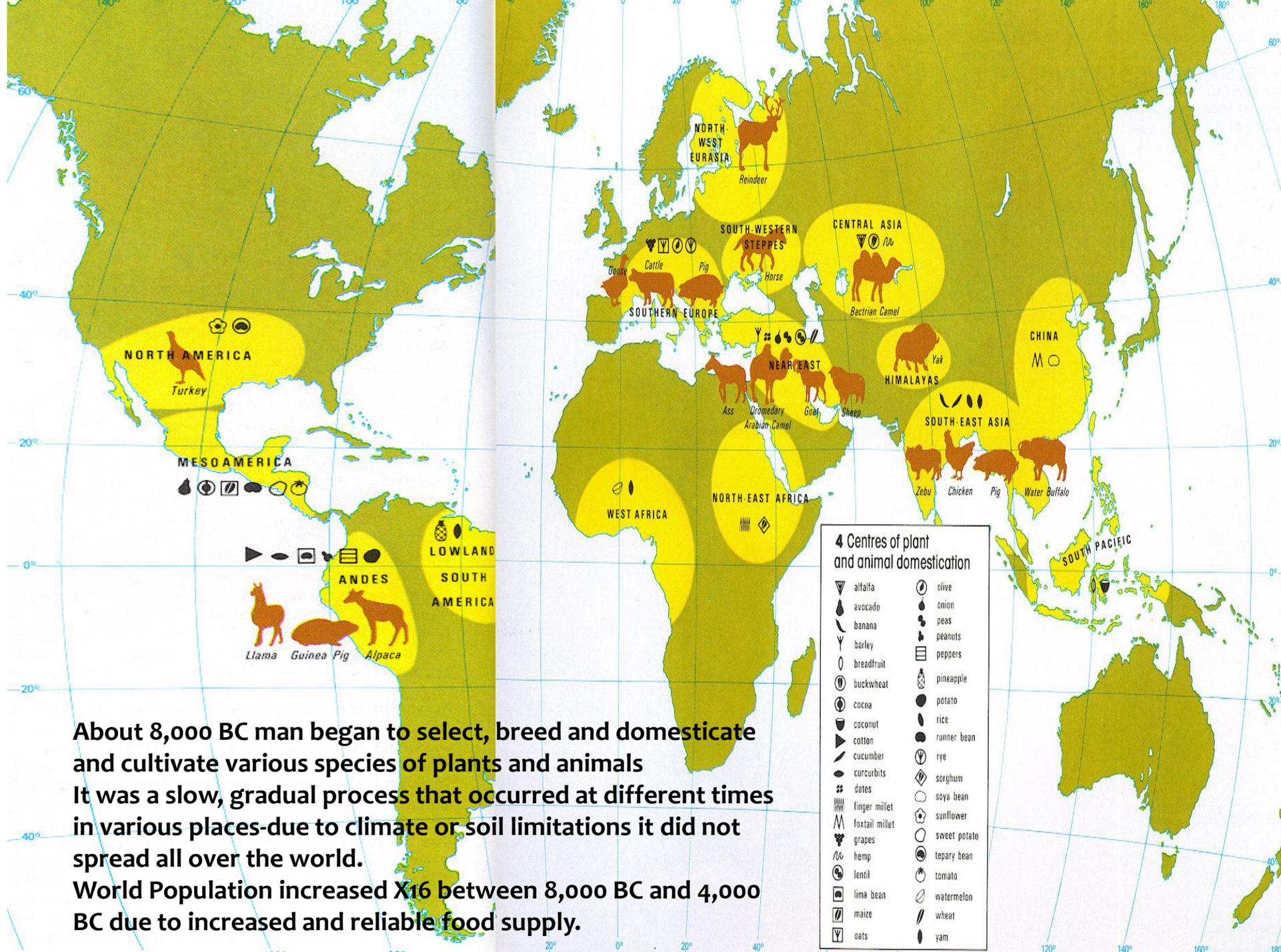
# THE SPREAD OF EARLY FARMING FROM 8000 BC



# The First Agricultural Revolution-Animal Domestication

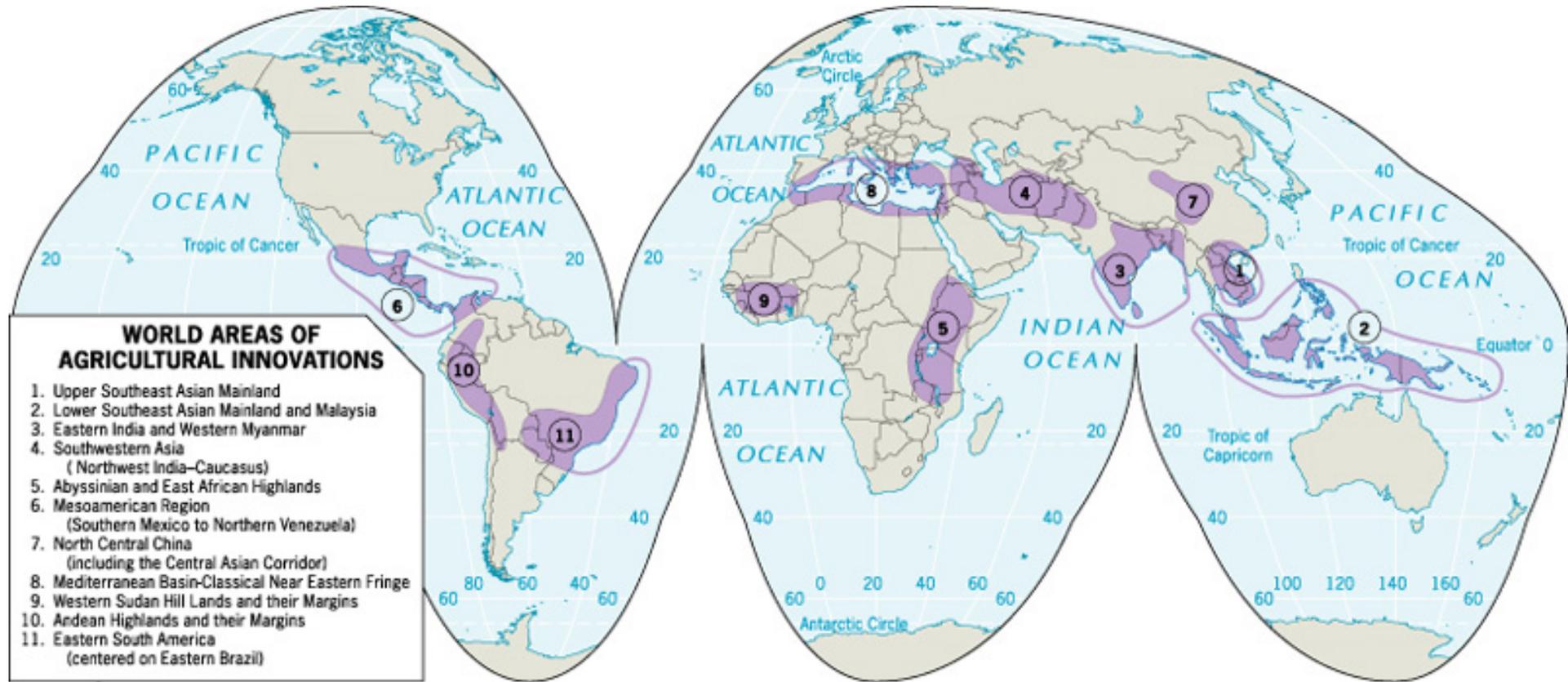
- Animals such as goats, pigs and sheep were domesticated about 8,000 yrs. ago.
- Domesticated animals in captivity are very different from their wild counterparts.





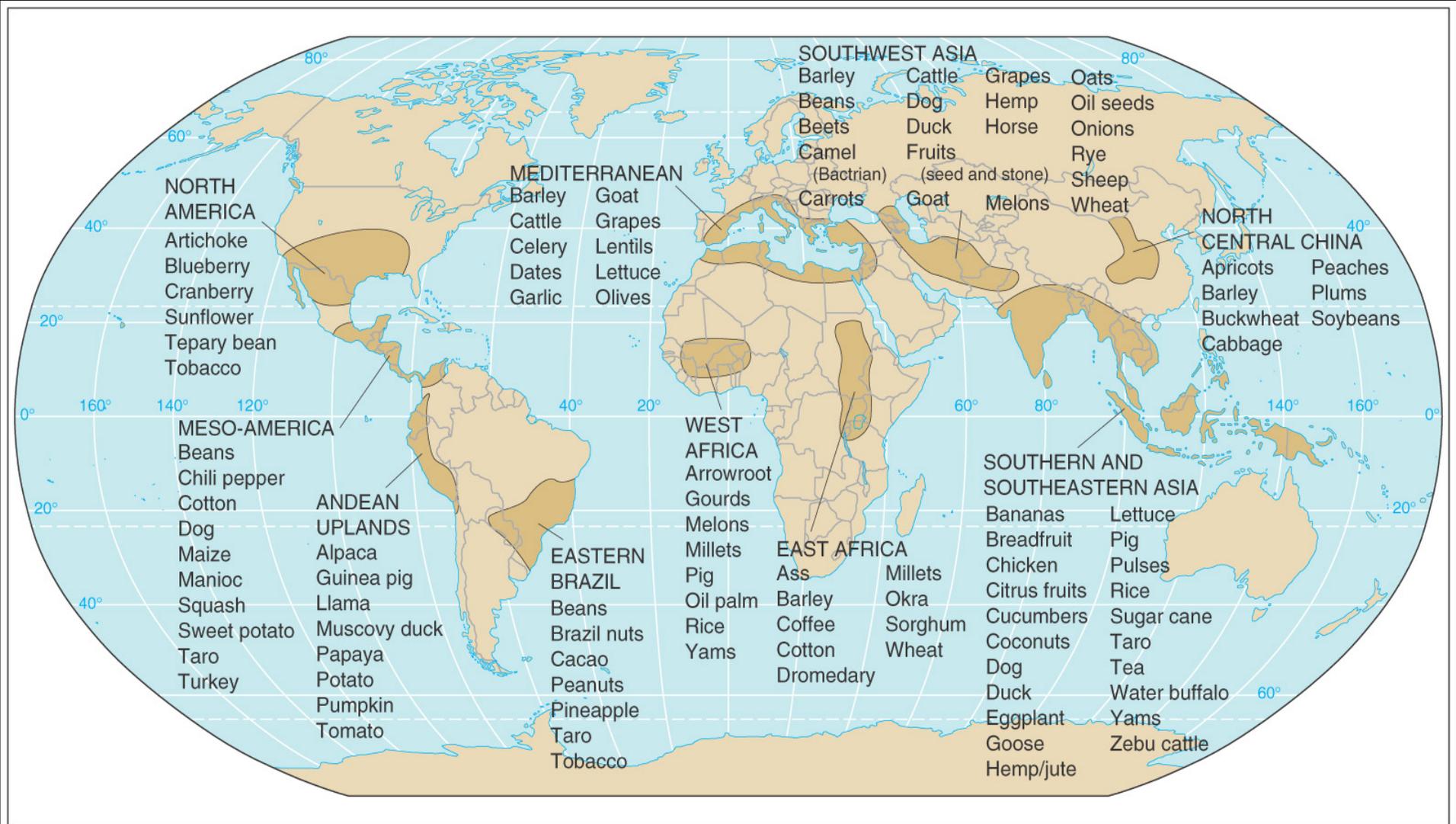
**About 8,000 BC man began to select, breed and domesticate and cultivate various species of plants and animals**  
**It was a slow, gradual process that occurred at different times in various places-due to climate or soil limitations it did not spread all over the world.**  
**World Population increased X16 between 8,000 BC and 4,000 BC due to increased and reliable food supply.**

# World Areas of Agricultural Innovations



Carl Sauer identified 11 areas where agricultural innovations occurred.

# Origins of Agriculture

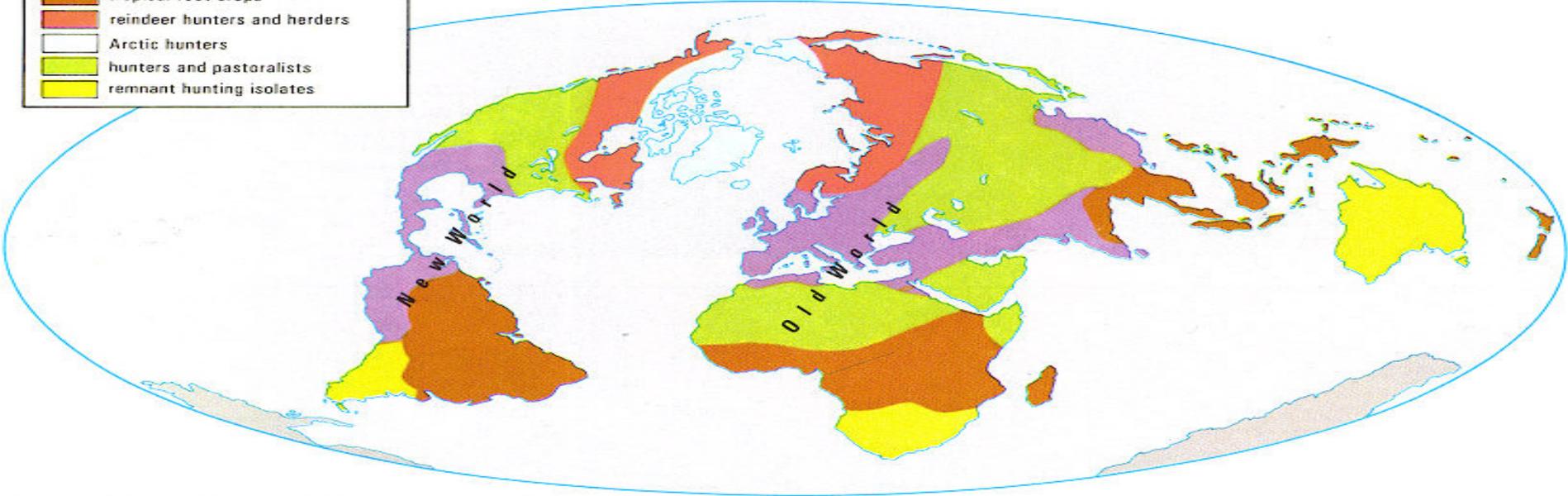


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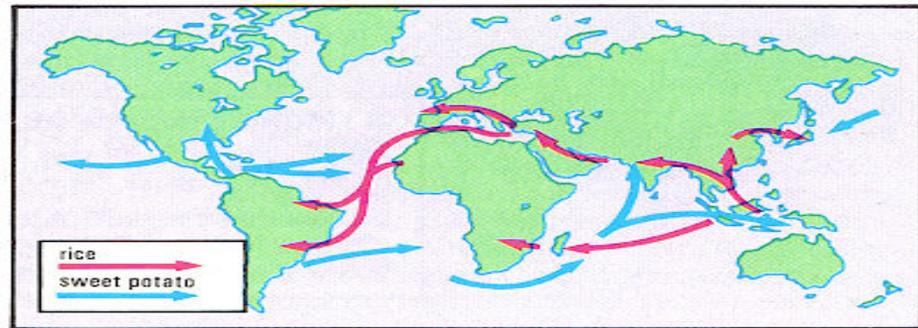
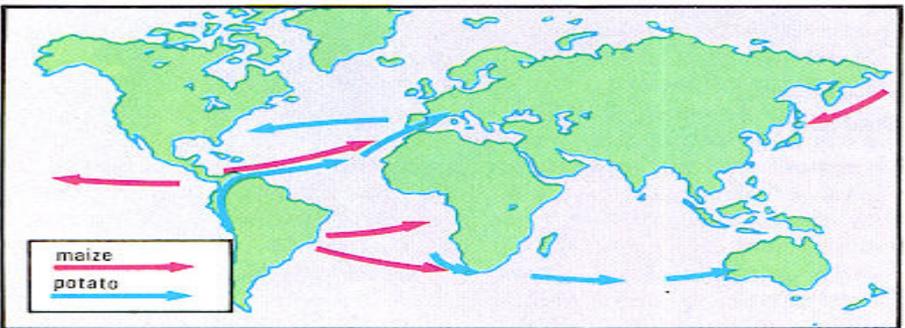
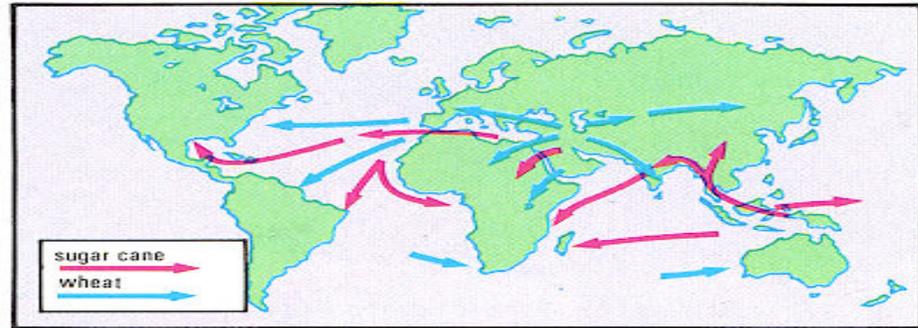
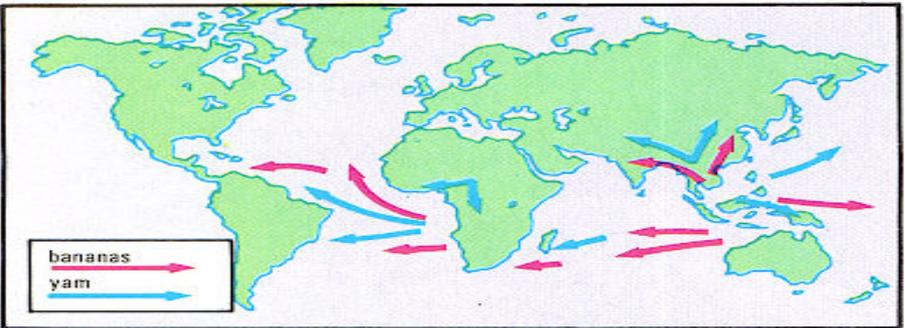
Which of these areas are considered cultural hearths?

# 1 World economies

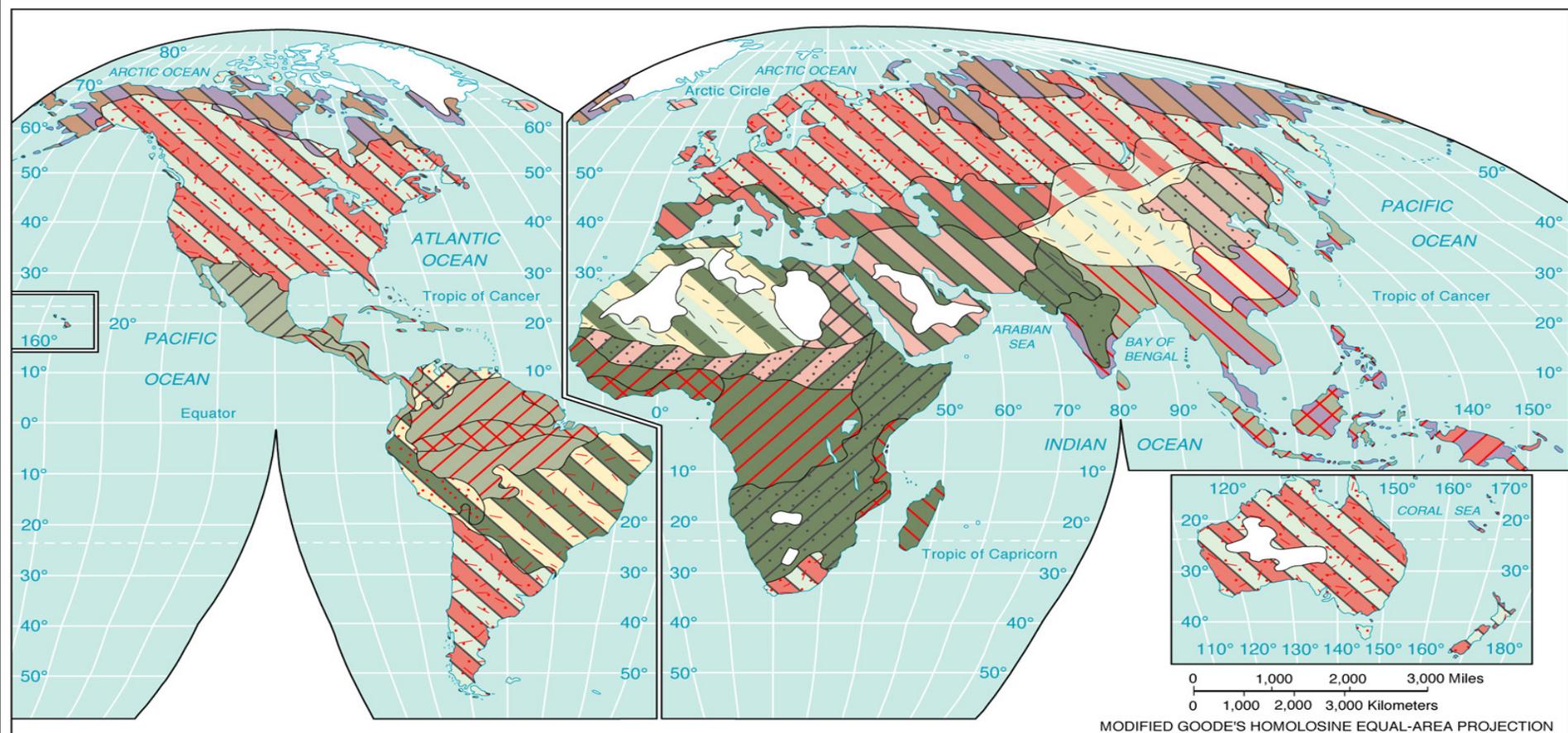
- cereal crops
- tropical root crops
- reindeer hunters and herders
- Arctic hunters
- hunters and pastoralists
- remnant hunting isolates



# 5 The diffusion of plants



# Contemporary Food Consumption



## Calorie Sources

	Wheat		Rice
	Maize		Starchy roots
	Barley		Sugar
	Millet, sorghum		Potatoes

## Protein Sources

	} Choice of meats beef, pork, mutton		Fish
		Dairy produce	} Choice of pulses beans, peas, etc.
		Choice of pulses beans, peas, etc.	
	Animal fat		

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**Is there a spatial relationship to the original hearths?**

# Neolithic Revolution (First Ag Rev)



## Primary effects:

- Urbanization
- Social stratification
- Occupational specialization
- Increased population densities

## Secondary effects:

- Endemic diseases
- Famine

# SECOND AGRICULTURAL REVOLUTION



- Coincided with the Industrial Revolution
- Modification of subsistence farming practices
  - Crop rotation
  - Use of natural and semi-processed fertilizers
  - New tools and equipment
- Effects:
  - Dramatic increase in crop and livestock yields
  - Surpluses of food needed to feed those working in factories
  - New technologies developed to improve crop yields
- Transportation technology linking farmland to the commercial food market
- Supported by governments of Europe



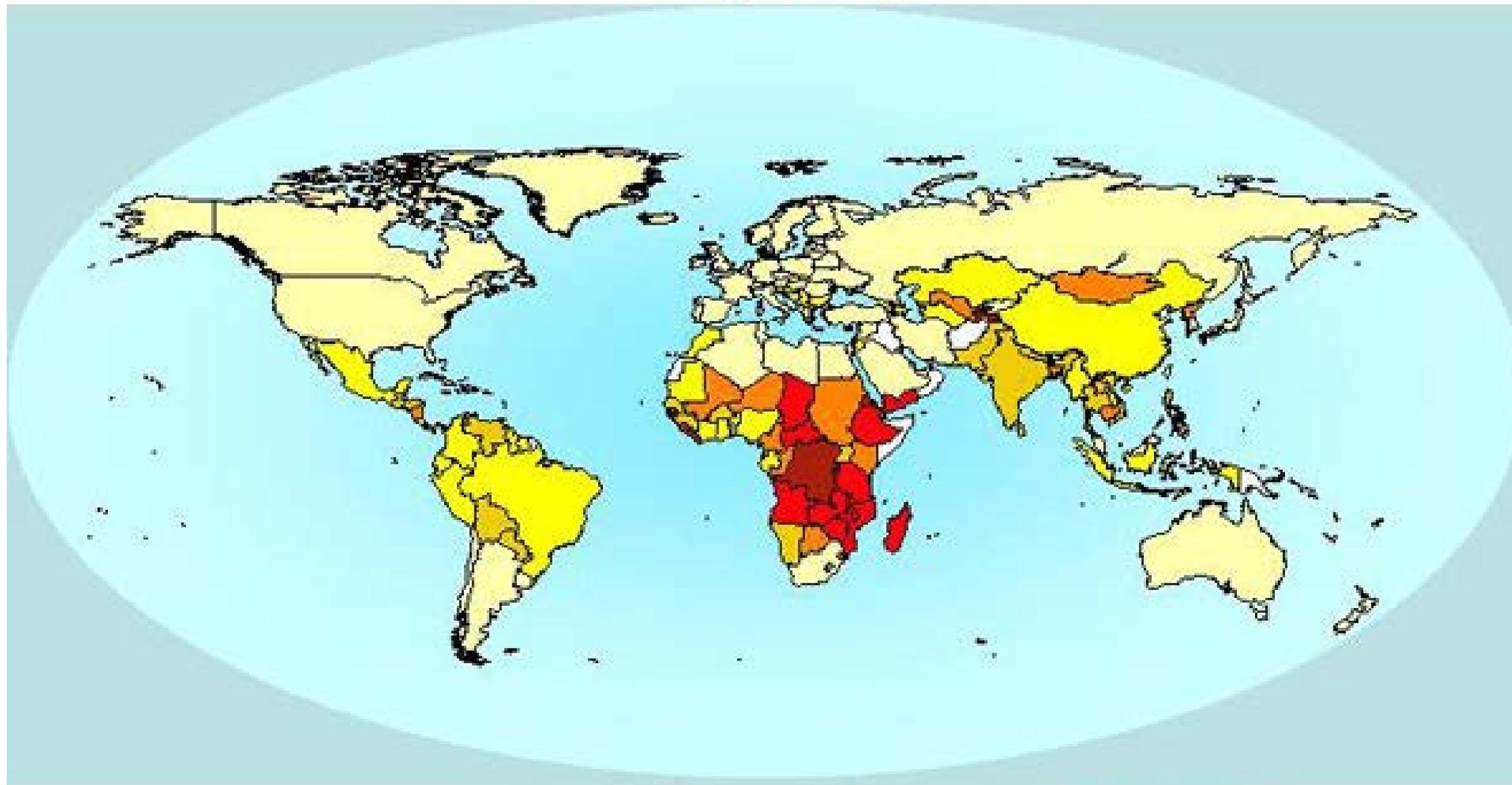
# THIRD AGRICULTURAL REVOLUTION



- Also known as the Green Revolution
- Dates back to the 1930s
- Manipulation of seed varieties to increase crop yields
- 1960s – focus of the Green Revolution turned to India
- Crops impacted: corn, wheat, rice (Produced more at a faster pace)
- Decreased famine in numerous areas
- “Hunger Areas” greatly impacted
- Hybrid of seeds and fertilizers that



# Hunger map



النسبة المئوية للبلدان لتغذية السكان

餓者不足人口

Undernourished population

Population sous-alimentée

Población subnutrida

2002-2004

# Agricultural Revolutions

Technology allows much greater production (surplus) with less human labor, but often has high social and environmental costs.

- **Metal plows, Reapers, Cotton Gin**
- **Tractors (Internal Combustion Engine)**
- **Combines**
- **Chemical Pesticides/Fertilizers**
- **Hybrid Crops**
- **Genetically-modified Crops**



# AGRICULTURE TODAY...

- Agriculture has been transformed into a globally integrated system.
- The introduction of new technologies, political concerns about food security and self-sufficiency, and changing opportunities for investment and employment are among the many forces that have dramatically shaped agriculture as we know it today.
- The industrialized agricultural system of today's world has developed from – and largely displaced – older agricultural practices, including subsistence agriculture and pastoralism.
- Transformations in agriculture have had dramatic impacts on the environment, including soil erosion,

# AGRICULTURE TOMORROW...

- World population will grow from around 6 billion people today to 8.3 billion people in 2030.
- The world population will be increasingly well-fed by 2030.
- The number of hungry people in developing countries is expected to decline, but Sub-Saharan Africa is cause for serious concern.
- Much of future food production growth will come from higher productivity.
- The expansion of farmland for food production will be slower than in the past.
- Globally, deforestation will probably continue to slow down.
- At a global level there is enough water available, but some regions will face serious water shortages.
- Modern biotechnology offers promises as a means to improving food security.
- Climate change could increase the dependency of some developing countries on food imports.

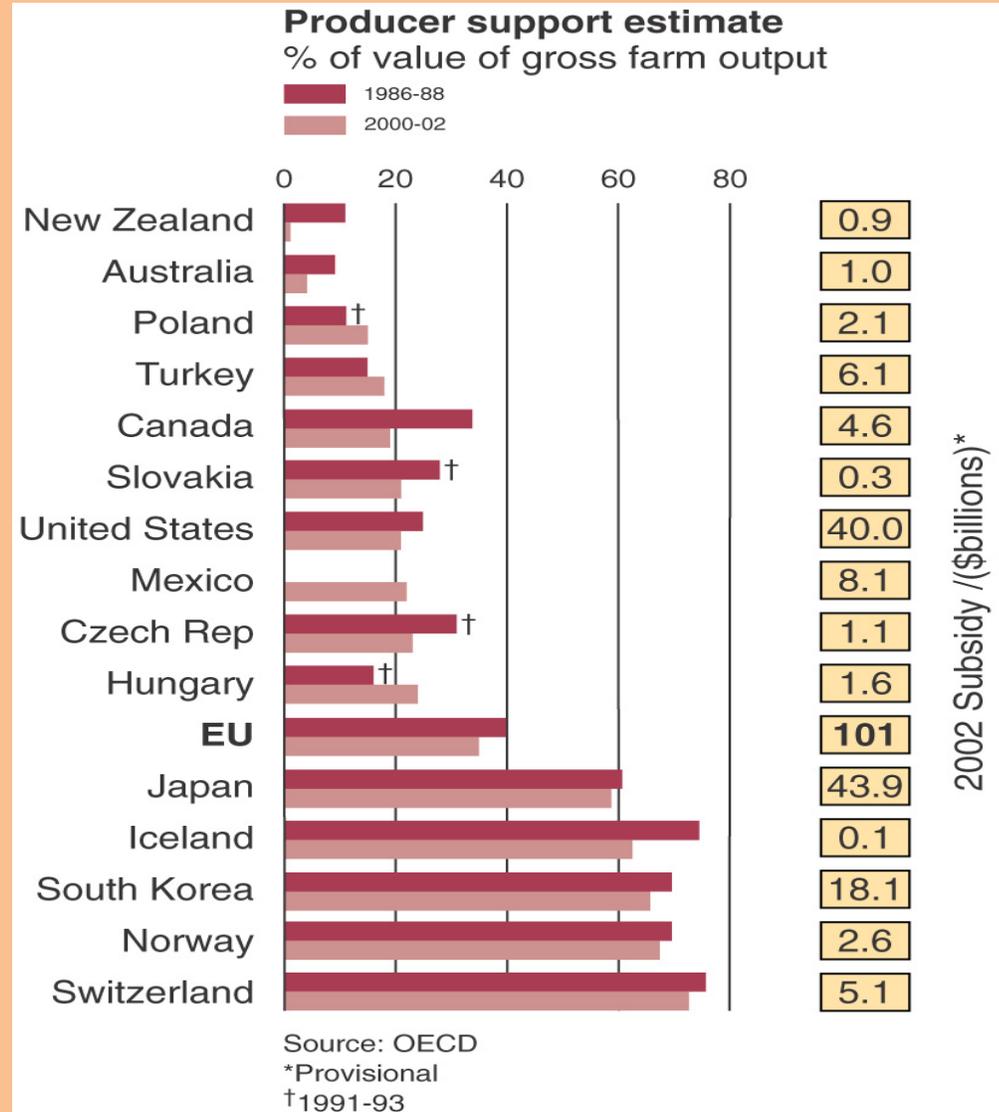
# Agriculture is a global economy.

**TABLE 8-1 Top Ten Importers and Exporters of Wheat, Rice, and Corn, 2001  
(in thousands of metric tons; data from FAO)**

Leading Exporters	Exports	Leading Importers	Imports
<b>Wheat (total traded 113,705)</b>			
U.S.	25,782	Italy	7,526
Canada	17,658	Brazil	7,016
France	15,621	Iran	6,438
Australia	15,542	Japan	5,521
Argentina	10,789	Egypt	4,412
<b>Rice (total traded 26,761)</b>			
Thailand	7,685	Ivory Coast	1,948
Vietnam	3,729	Nigeria	1,508
U.S.	2,622	Iraq	950
Pakistan	2,423	Philippines	810
India	2,193	Iran	778
<b>Maize (total traded 78,909)</b>			
U.S.	47,943	Japan	16,221
Argentina	10,909	Korea (South)	8,481
France	7,046	Mexico	6,174
China	5,997	China	5,234
Hungary	1,568	Egypt	4,797

# Developed Countries Undercut Free Markets in Agriculture

- Farmers in the developed world are paid an average of 2/3 more than the free market would provide.
- These subsidies to the world's richest farmers directly damage the agricultural economies of the poorest nations.



# RELATIONSHIP OF FARMING TO OTHER BUSINESSES

- Commercial farming is closely tied to other businesses.
- Commercial farming has been called **agribusiness**, integrated into a large food production industry.
- Although farmers are less than 2 percent of the U.S. labor force, more than 20 percent of U.S. labor works in food production related to agribusiness: food processing, packaging, storing, distributing, and retailing.

# Agribusiness:

## The *industrialization of agriculture*



- Modern commercial farming is very dependent on inputs of chemical fertilizer, pesticides, herbicides.
- Oil is required to make fertilizer and pesticides.
- It takes 10 calories of energy to create 1 calorie of food in modern agriculture.
- Small farmer can't buy needed equipment and supplies.
- Fewer than 2% of U.S. population works in agriculture

