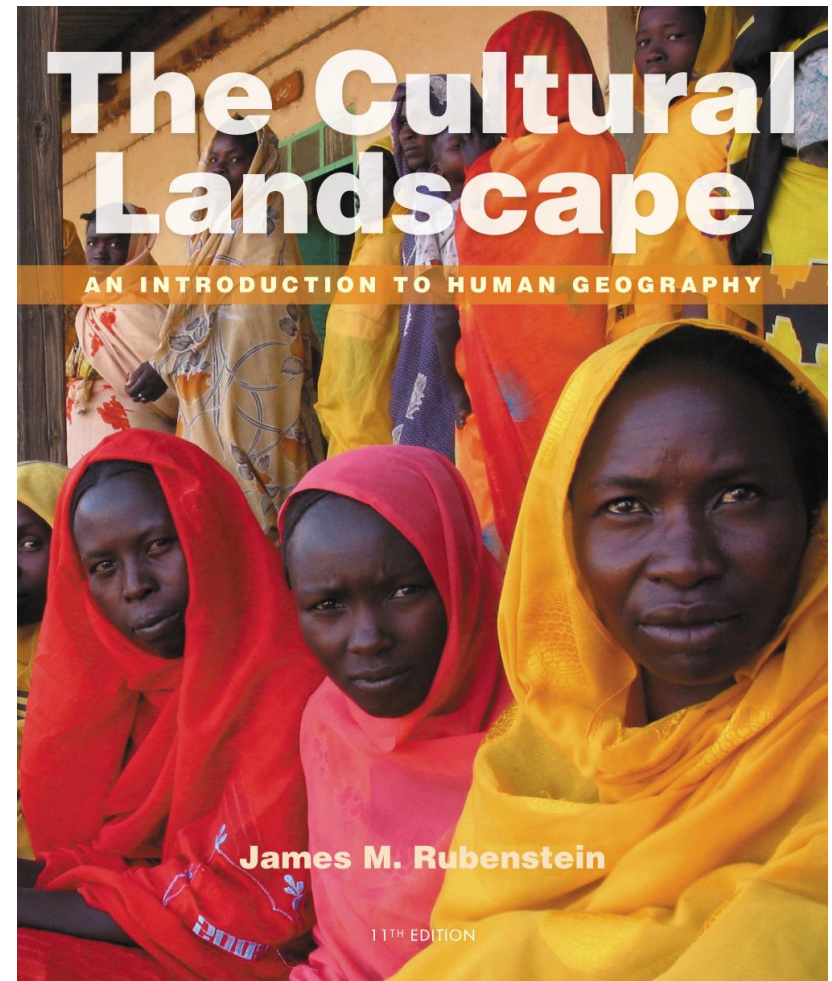


# The Cultural Landscape

Eleventh Edition

## Food and Agriculture

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University of Nebraska-Lincoln



# Key Issues

- Where did agriculture originate?
- Why do people consume different foods?
- Where is agriculture distributed?
- Why do farmers face economic difficulties?

# Learning Outcomes

- 10.1.1: Identify the major crop and livestock hearths.
- 10.1.2: Describe the major differences between subsistence and commercial agriculture.
- 10.2.1: Explain differences between developed and developing countries in food consumption.
- 10.2.2: Explain the global distribution of undernourishment.

# Learning Outcomes

- 10.3.1: Identify the 11 major agricultural regions.
- 10.3.2: Explain how pastoral nomadism work in the dry lands of developing regions.
- 10.3.3: Explain how shifting cultivation works in the tropics of developing regions.
- 10.3.4: Explain how intensive subsistence farming works in the high population concentrations of developing regions.

# Learning Outcomes

- 10.3.5: Describe reasons for growing crops other than wet rice in intensive subsistence regions.
- 10.3.6: Describe how mixed crop and livestock farming works.
- 10.3.7: Describe how dairy farming and commercial gardening work.
- 10.3.8: Describe how grain and Mediterranean farming work.
- 10.3.9: Describe how livestock ranching works.

# Learning Outcomes

- 10.4.1: Describe the impact of population growth and trade on farming in developing countries.
- 10.4.2: Understand distinctive challenges for developing countries to increase food supply.
- 10.4.3: Explain the impact of overproduction and market access on farming in developed countries.

# Learning Outcomes

- 10.4.4: Explain the contribution of expanding exports and farmland to world food supply.
- 10.4.5: Describe the contribution of fishing to world food supply.
- 10.4.6: Describe the contribution of higher productivity to world food supply.

# Where Did Agriculture Originate?

- Invention of Agriculture
  - Prior to the advent of agriculture, all humans probably obtained needed food through hunting and gathering.
  - Origins of agriculture cannot be documented with certainty, because it began before recorded history.
  - *Agriculture* is deliberate modification of Earth's surface through cultivation of plants and rearing of animals to obtain sustenance or economic gain.

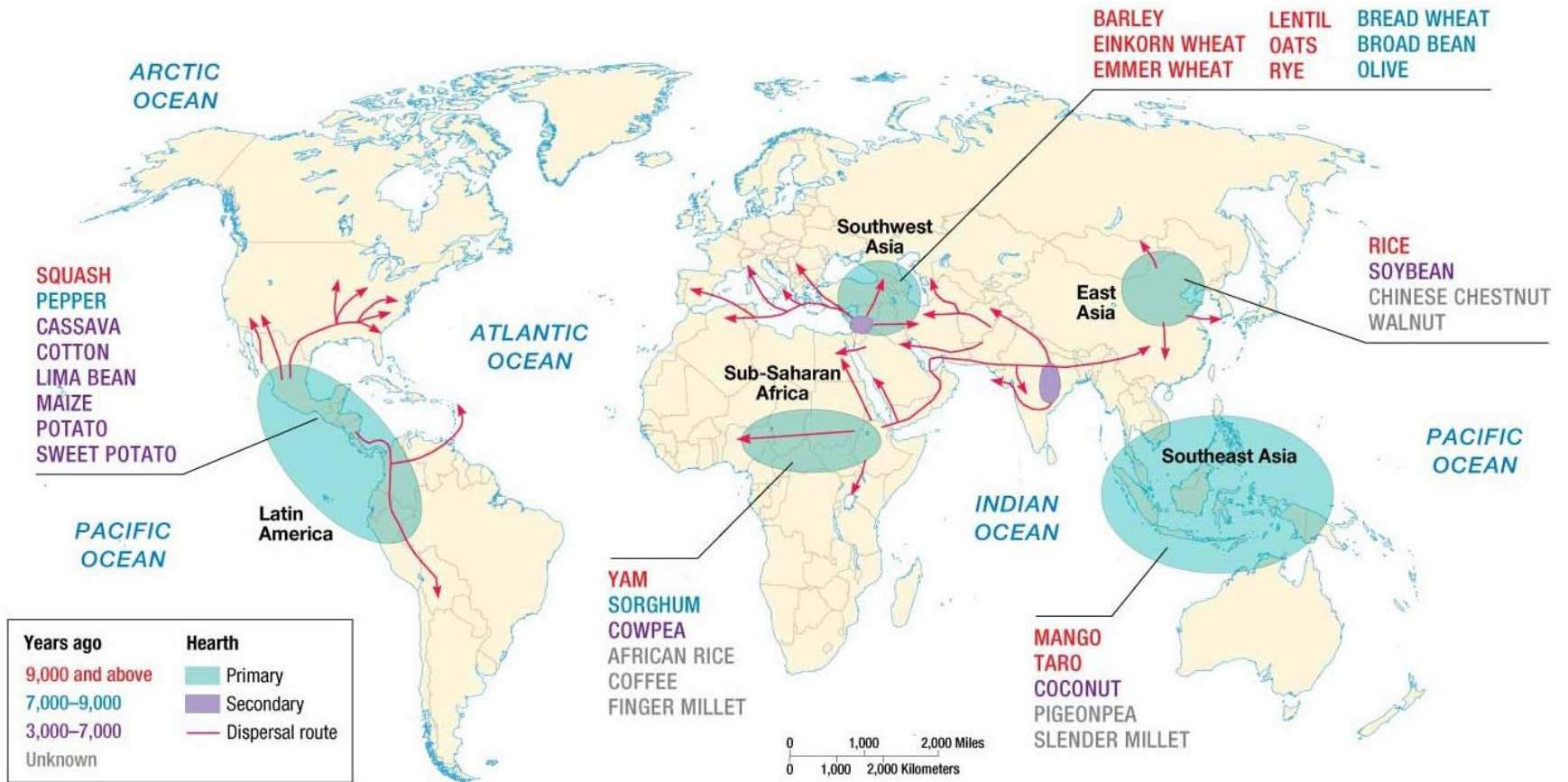


# Where Did Agriculture Originate?

- Agricultural Revolution
  - The time when humans first domesticated plants and animals and no longer relied entirely on hunting and gathering was known as the *agricultural revolution*.
  - Agriculture originated in multiple hearths around the world:
    - Crop Hearths:
      - Southwest Asia:
        - » Early crops: barley, wheat, lentil, and olive.
      - East Asia:
        - » Early crops: Rice and millet.

# Where Did Agriculture Originate?

- Crop Hearths Cont'd:
  - Sub-Saharan Africa:
    - » Early crops: Sorghum, yams, millet, and rice.
  - Latin America:
    - » Early crops: Beans, cotton, potato, and most importantly maize (corn).

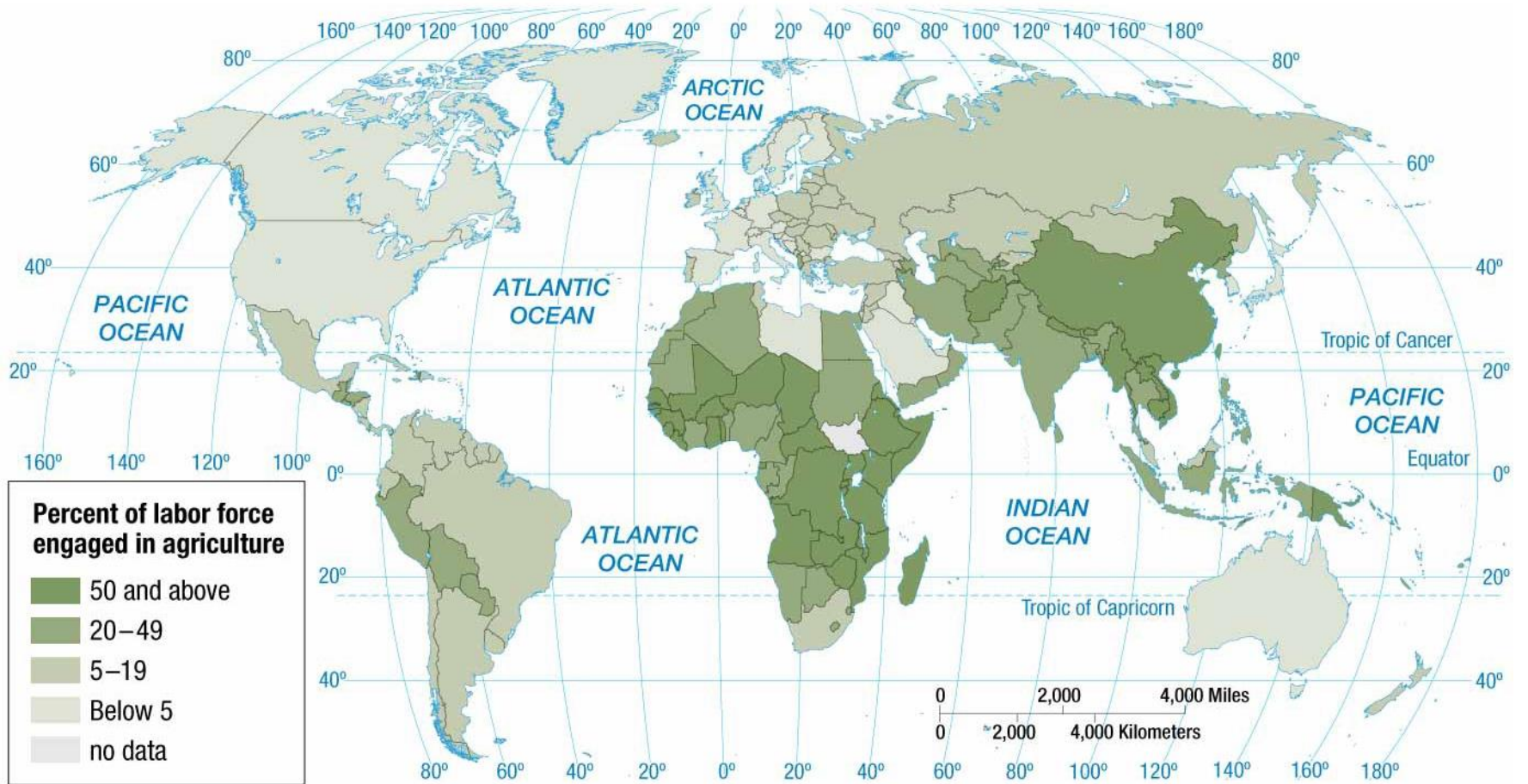


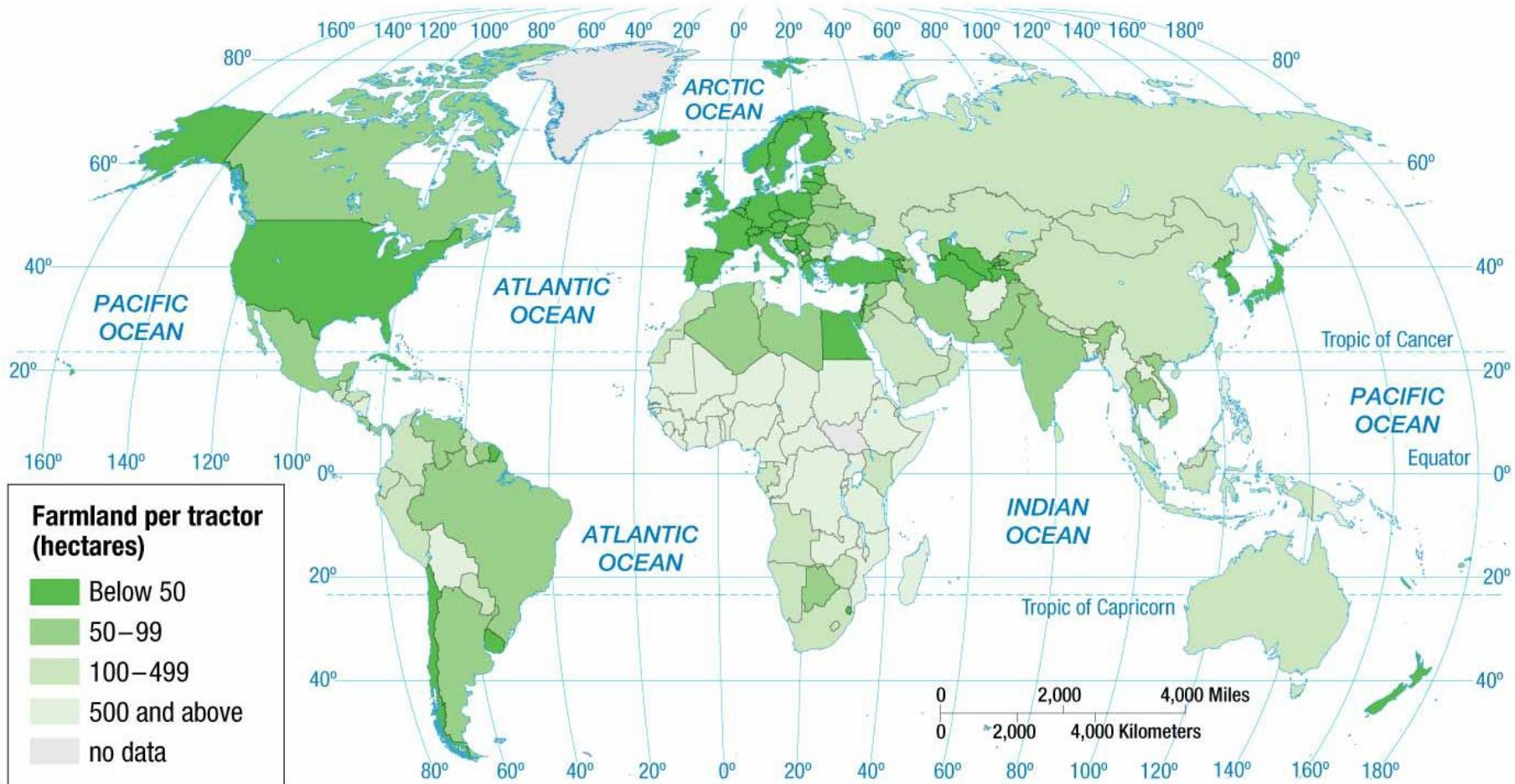
# Where Did Agriculture Originate?

- Agricultural Revolution
  - Agriculture originated in multiple hearths around the world cont'd:
    - Animal Hearths:
      - Southwest Asia:
        - » Early domesticated animals: Cattle, goats, pigs, sheep, and dogs.
      - Central Asia:
        - » Early domesticated animals: Horses

# Where Did Agriculture Originate?

- Comparing Subsistence and Commercial Agriculture
  - *Subsistence agriculture* is the production of food primarily for consumption by the farmer's family.
    - Practiced primarily in developing countries
  - *Commercial agriculture* is the production of food primarily for sale off the farm.
    - Practiced primarily in developed countries.
    - Features that distinguish itself from subsistence agriculture include: lower percentage of farmers in labor force, highly mechanized, and larger farm size.







(a)



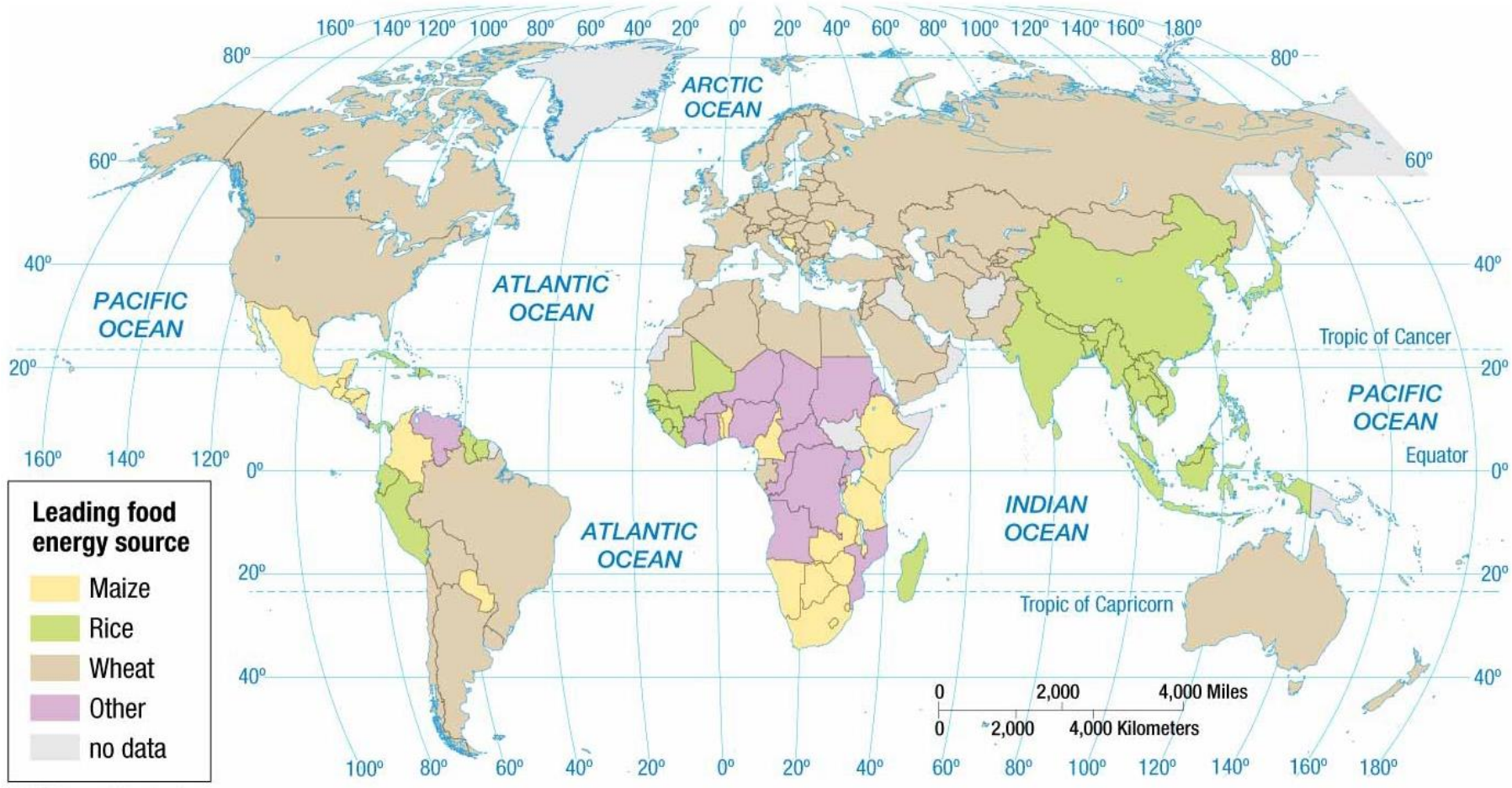
(b)



# Why Do People Consume Different Foods?

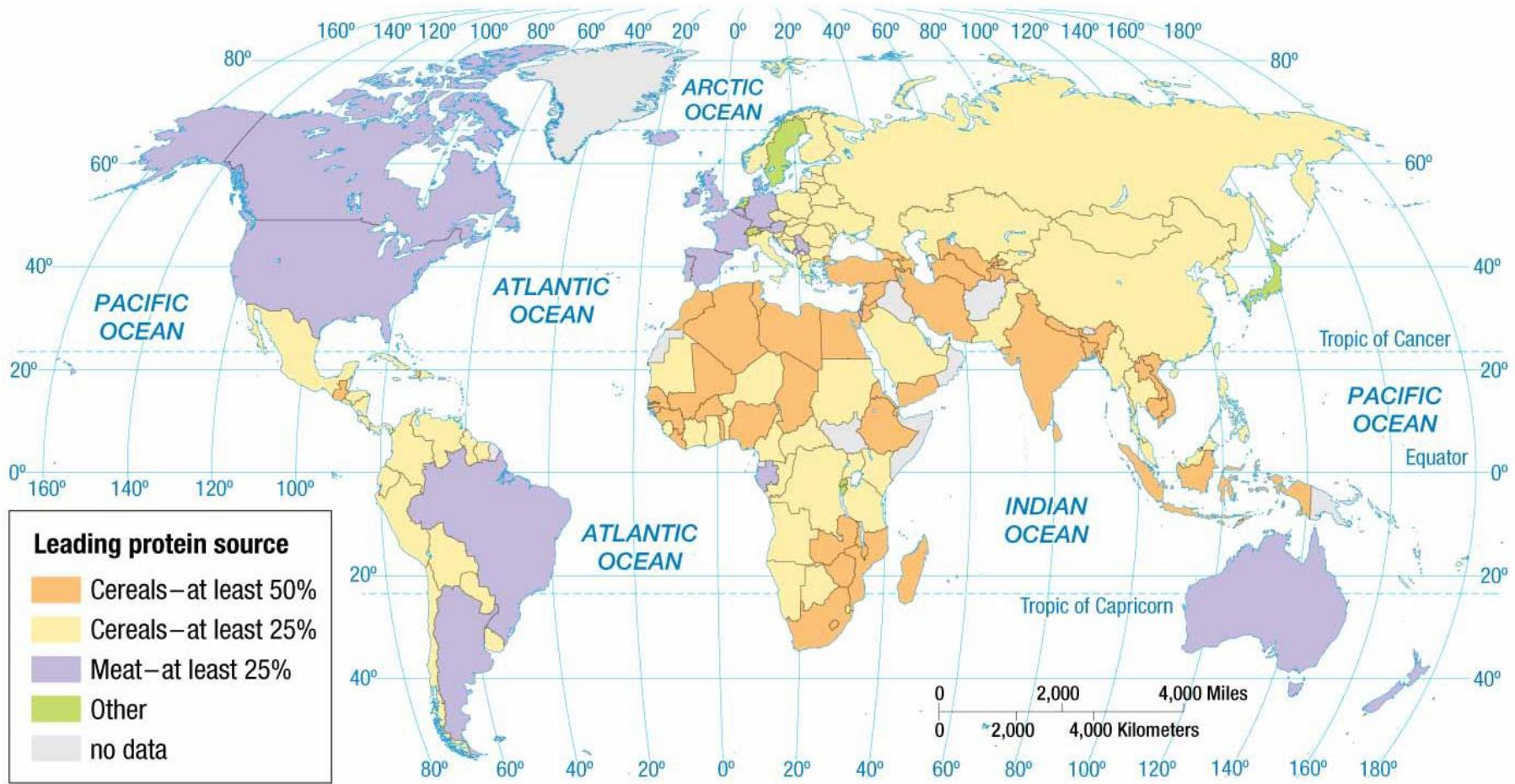
- Diet

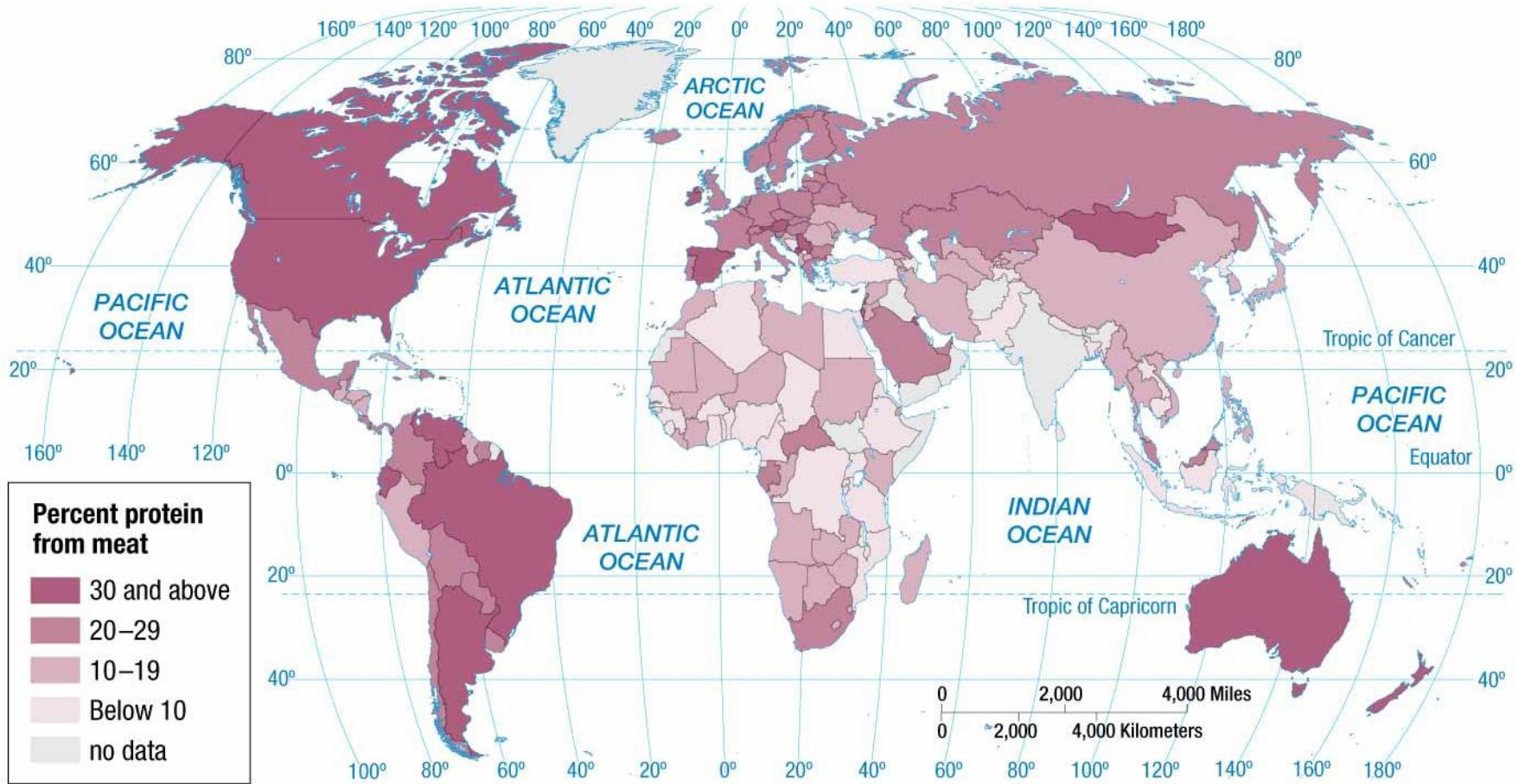
- *Dietary energy consumption* is the amount of food that an individual consumes.
- Consumption of food varies around the world, both in total amount and source of nutrients, for two reasons.
  1. Level of development
  2. Physical conditions



# Why Do People Consume Different Foods?

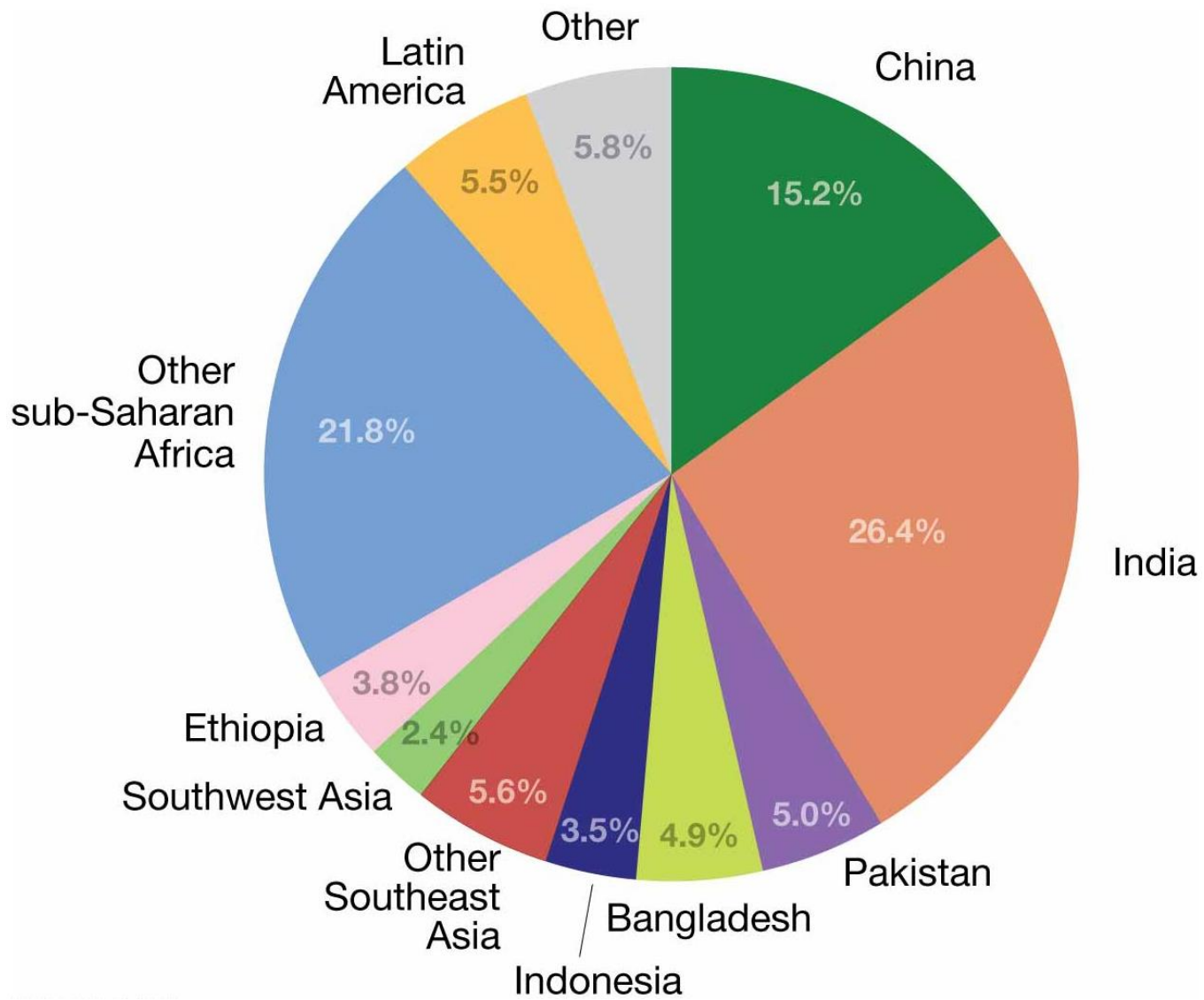
- Source of Nutrients
  - Developed and developing regions typically differ most in their primary sources of protein consumed.
    - Developed Countries
      - Leading source of protein is meat products.
        - » Beef
        - » Pork
        - » Poultry
    - Developing Countries
      - Leading source of protein is cereal grains.

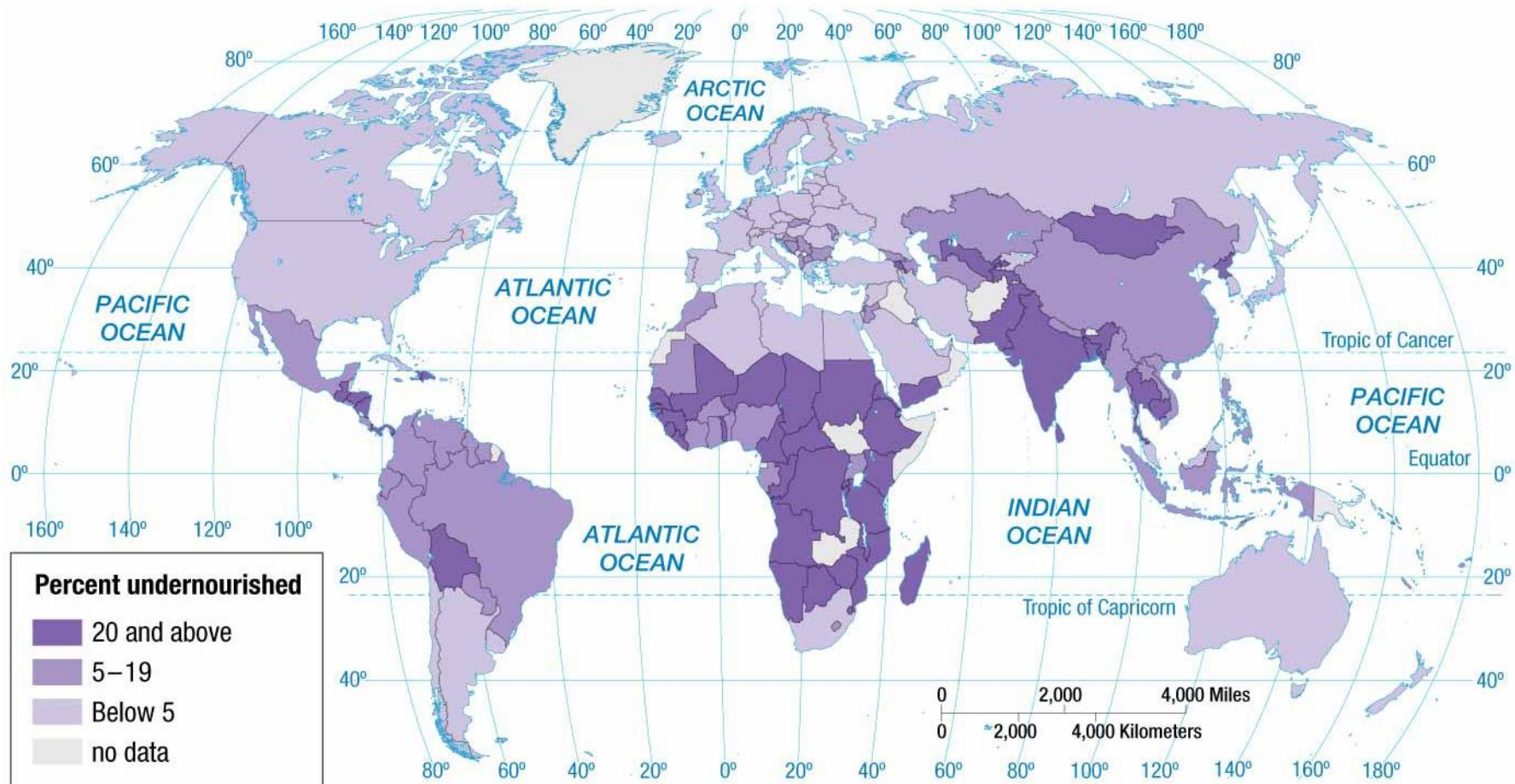




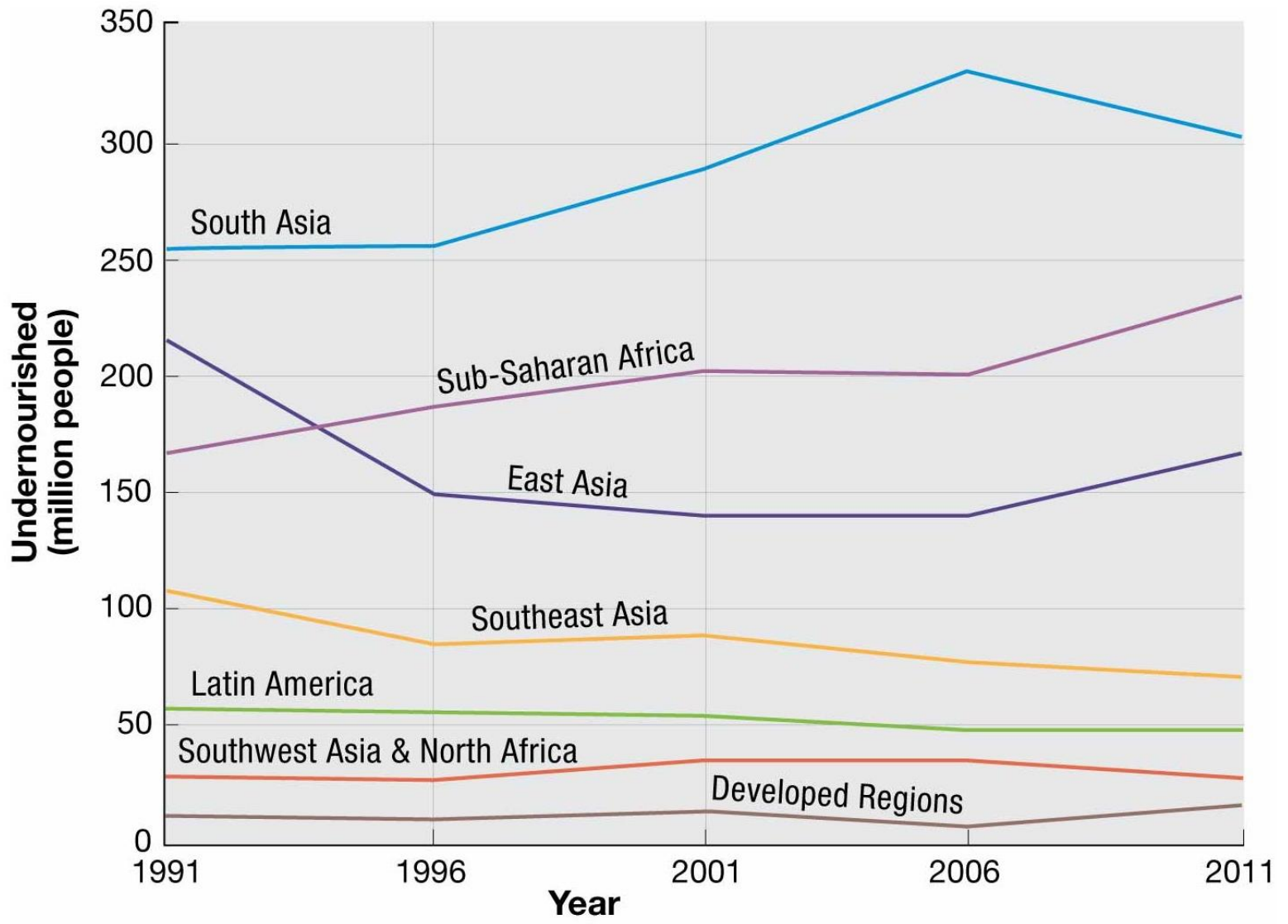
# Why Do People Consume Different Foods?

- Nutrition and Hunger
  - *Undernourishment* is dietary energy consumption that is continuously below the minimum requirement for maintaining a healthy life and carrying out light physical activity.
    - UN estimates 850 million people in world are undernourished.
      - 99% located in developing countries
    - Worldwide, the total number of undernourished people has not changed much in several decades.







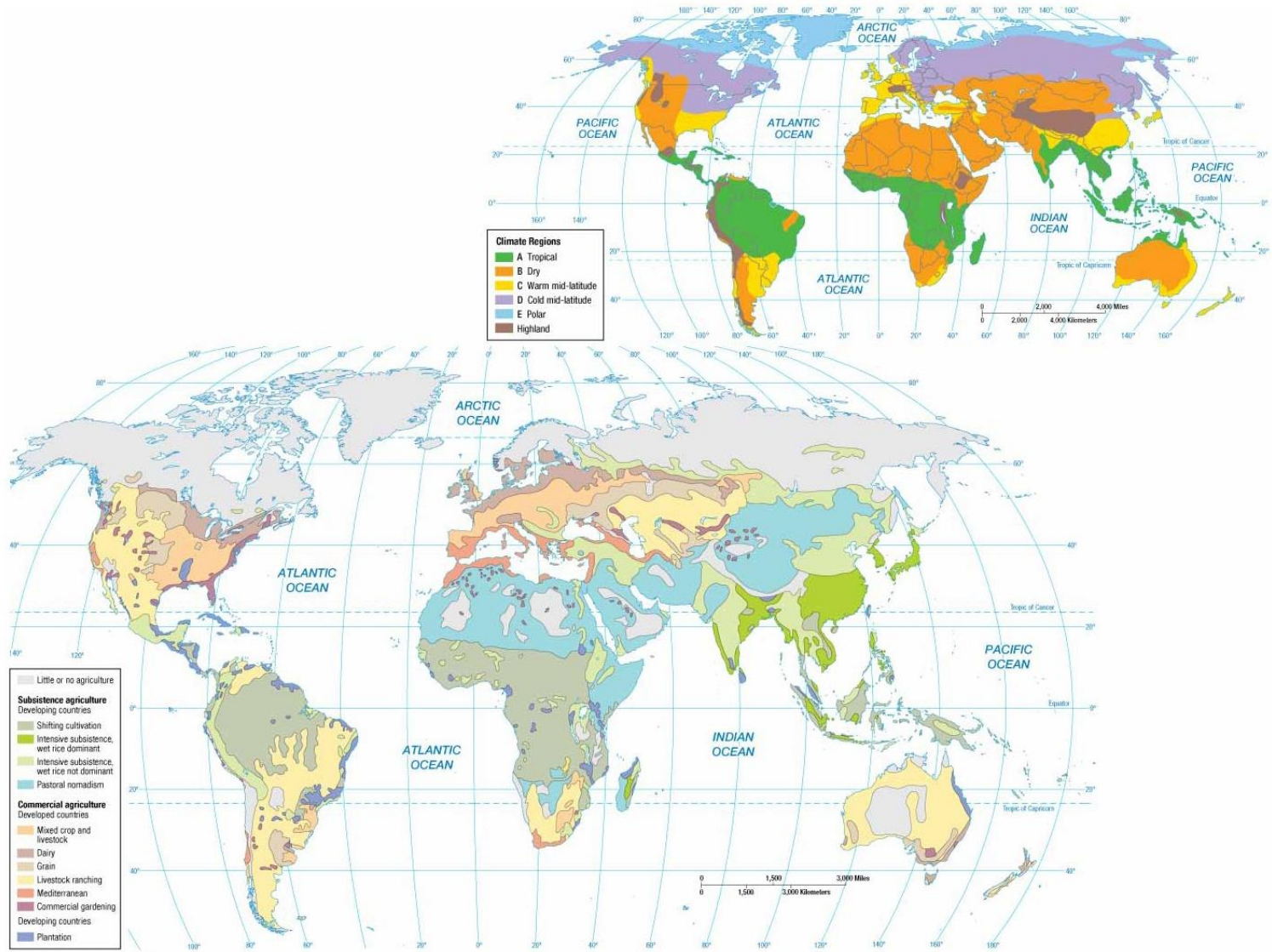


# Where is Agriculture Distributed?

- Geographer Derwent Whittlesey identified 11 main agricultural regions, plus an area where agriculture was nonexistent.
  - 5 present in developing countries
    1. Pastoral Nomadism
    2. Shifting Cultivation
    3. Intensive Subsistence, wet rice dominant
    4. Intensive Subsistence, crops other than rice dominant
    5. Plantation

# Where is Agriculture Distributed?

- 6 present in developed countries
  1. Mixed Crop and Livestock
  2. Dairying
  3. Grain
  4. Ranching
  5. Mediterranean
  6. Commercial Gardening



# Where is Agriculture Distributed?

- Agriculture in Developing Regions

- Pastoral Nomadism

- *Pastoral nomadism* is a form of subsistence agriculture based on the herding of domesticated animals.
    - Various approaches combine some reliance on sedentary agriculture with the herding of livestock.
      - Some pastoral nomads obtain grain from sedentary subsistence farmers.
      - More commonly, women and children of a nomadic group tend to crops at a fixed location.
      - Nomads may hire worker to practice sedentary agriculture.
      - Some nomads will remain in a place and cultivate the land only when rainfall is abundant.



# Where is Agriculture Distributed?

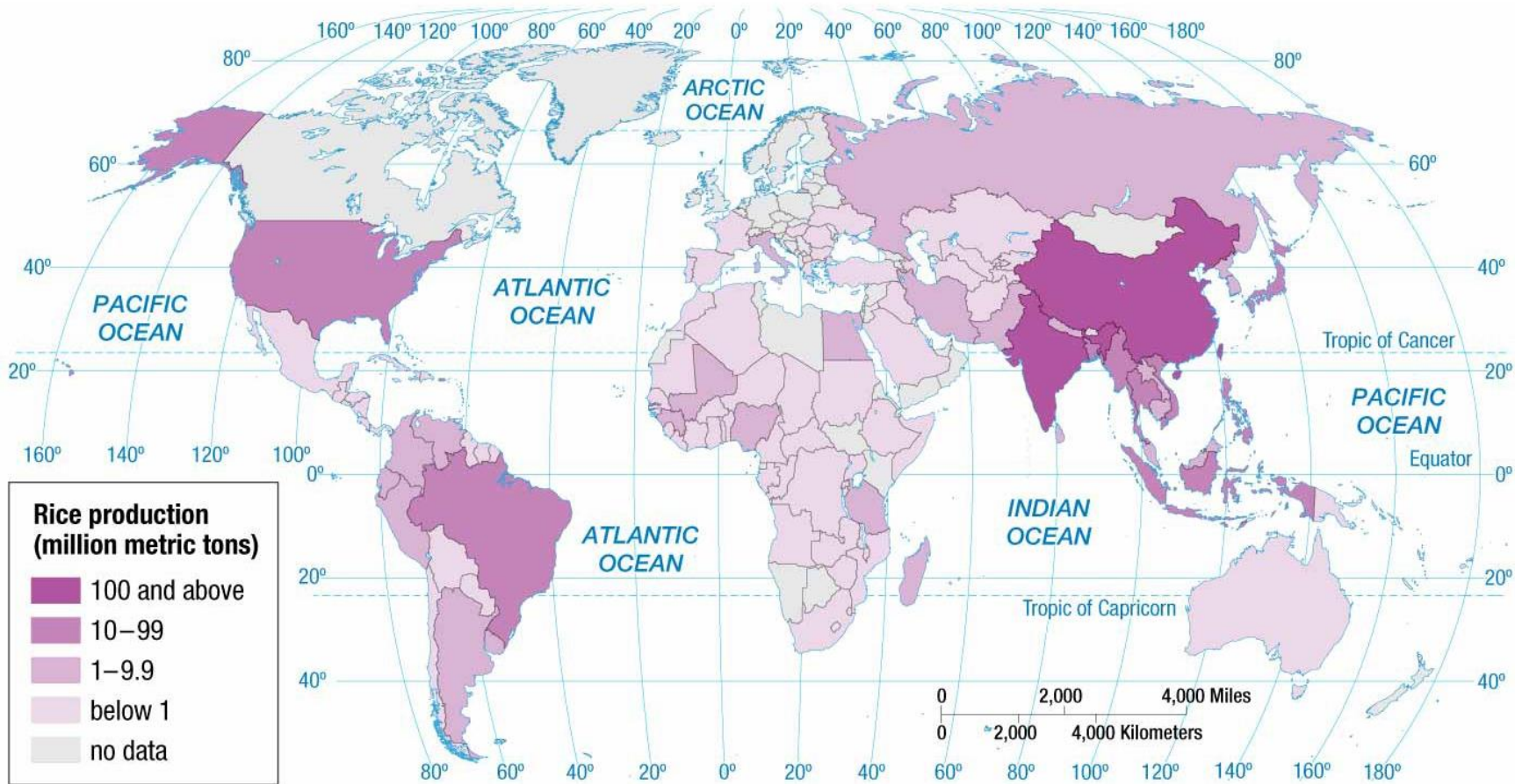
- Agriculture in Developing Regions
  - Shifting Cultivation
    - *Shifting cultivation* is characterized by two distinctive features:
      1. Farmers clear land for planting by slashing vegetation and burning the debris.
      2. Farmers grow crops on a cleared field for only a few years, until soil nutrients are depleted, and then leave it fallow for many years so the soil can recover.
        - » Farmers return to a fallow site as few as 6 years later or as many as 20 years later.
  - Land Ownership
    - Traditionally, land collectively owned by village.
    - Today, private individuals now own land, especially in Latin America.



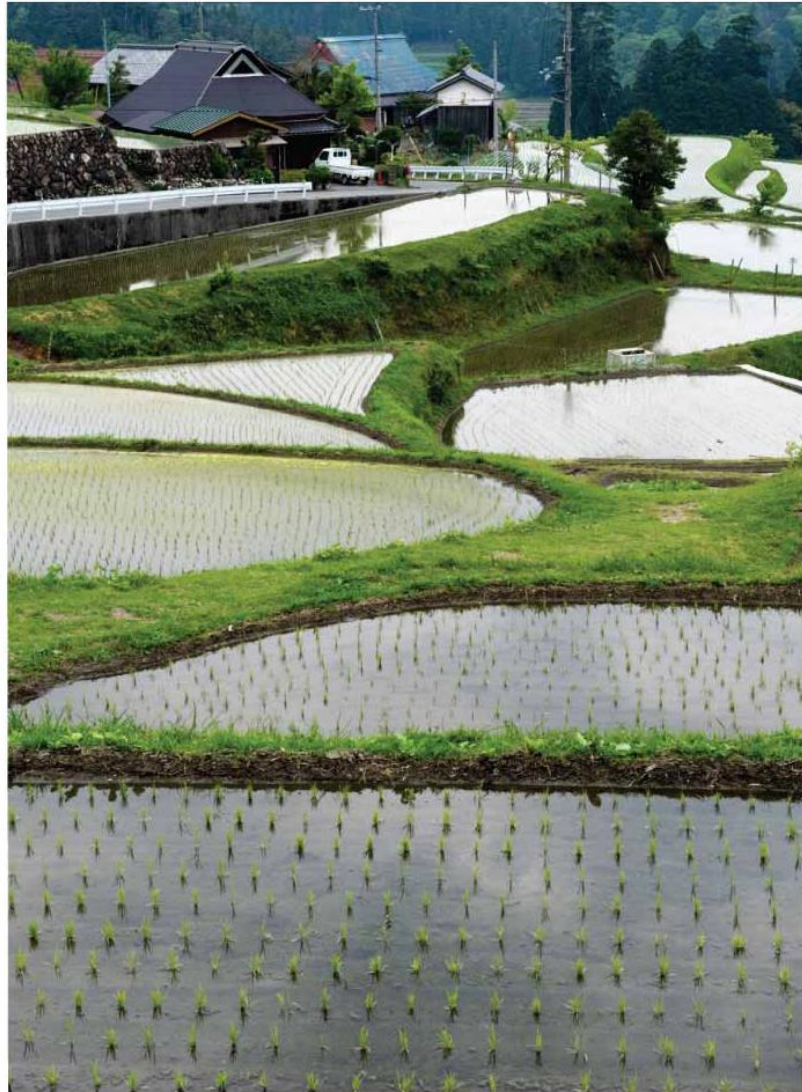


# Where is Agriculture Distributed?

- Agriculture in Developing Regions
  - Intensive Subsistence Farming
    - Feeds most of the  $\frac{3}{4}$  of the world's people who live in developing countries.
    - Farmers work intensively to subsist on a parcel of land.
      - Most of the work is done by hand or with animals rather than machines.
      - Virtually all available land is used for production.
      - Parcels of land are much smaller than elsewhere in world.
    - Example
      - *Wet rice*: the process where rice is planted on dryland in a nursery and then moved as seedlings to a flooded field to promote growth.







# Where is Agriculture Distributed?

- Agriculture in Developing Regions
  - Intensive Subsistence Farming
    - Intensive wet-rice farming is the dominant type of agriculture in the following places:
      - Southeastern China
      - East India
      - Much of Southeast Asia
    - Climate prevents farmers from growing wet rice in portions of Asia, especially where summer precipitation levels are too low and winters are too harsh.

# Where is Agriculture Distributed?

- Agriculture in Developed Regions
  - Commercial agriculture in developed countries can be divided up into six main types:
    - Mixed Crop and Livestock Farming
    - Dairy Farming
    - Commercial Gardening and Fruit Farming
    - Grain Farming
    - Mediterranean Agriculture
    - Livestock Ranching
  - *Agribusiness* is commonly used to refer to these types of farming listed, because the family farm is not an isolated activity but is integrated into a large food-production industry.

# Where is Agriculture Distributed?

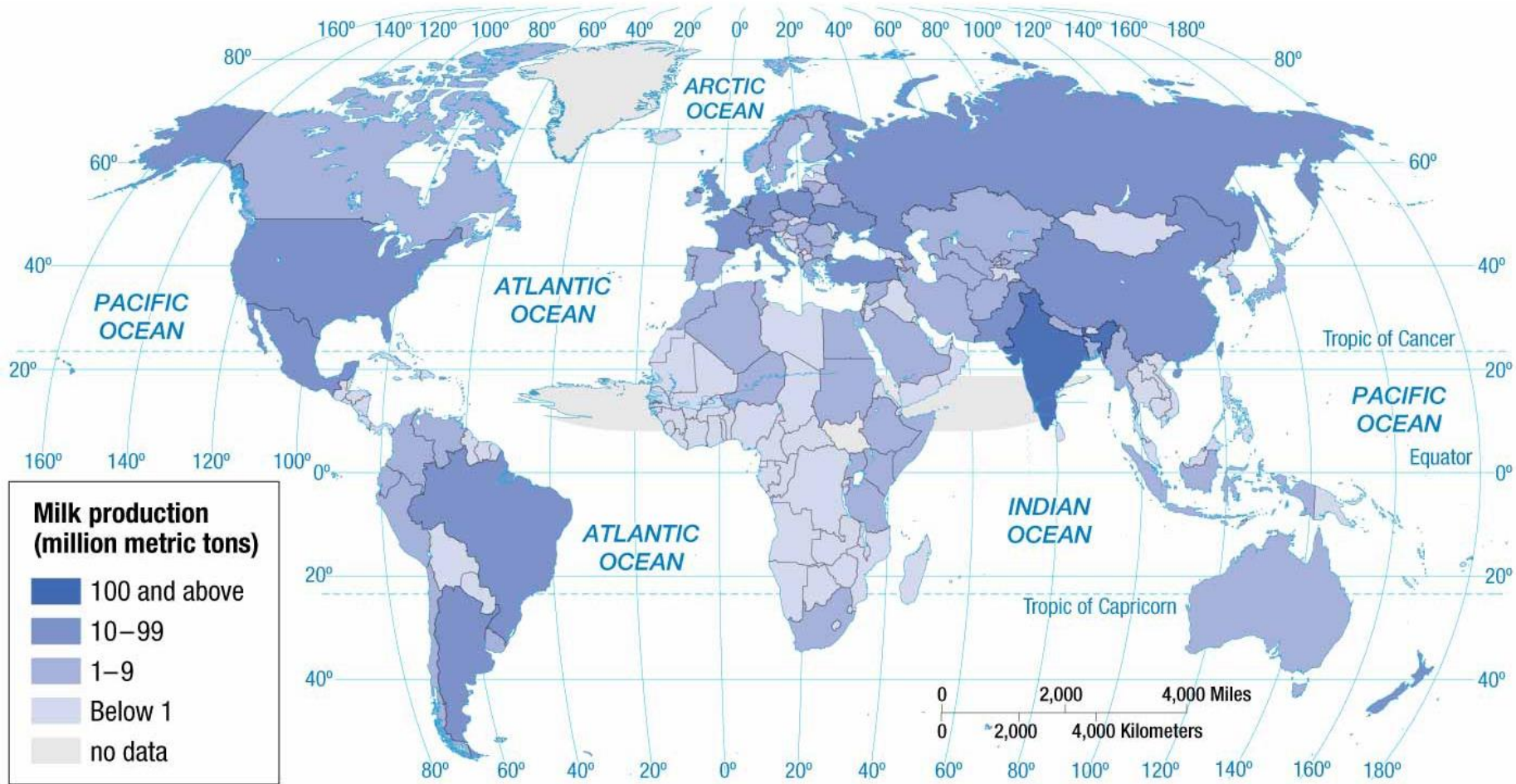
- Agriculture in Developed Regions
  - Mixed Crop and Livestock Farming
    - Most distinctive characteristic is the integration of crops and livestock.
      - Most of the crops are fed to animals instead of humans.
    - Typical example devotes nearly all land area to growing crops but derives more than  $\frac{3}{4}$  of its income from the sale of animal products. e.g. beef and eggs
    - Permits farmers to distribute the workload more evenly through the year, because crops require less attention, aside from planting and harvesting them.
    - Typically involves *crop rotation*, practice of rotating use of different fields from crop to crop each year to avoid exhausting the soil.





# Where is Agriculture Distributed?

- Agriculture in Developed Regions
  - Dairy Farming
    - Most important type of commercial agriculture in the first ring outside the large cities because of transportation factors.
    - Ring surrounding a city from which milk can be supplied is known as the *milkshed*.
      - Advancements in modes of transportation have increased the radius of milksheds to 500 km. (300 mi.)
  - Process
    - Dairy farmers typically sell their milk to wholesalers who later distribute it to retailers.
    - Retailers then sell it to consumers in shops or at home.



# Where is Agriculture Distributed?

- Agriculture in Developed Regions
  - Commercial Gardening and Fruit Farming
    - Predominant type of farming in southeastern U.S.
    - Commonly referred to as *truck farming* from the Middle English word, truck, meaning “bartering” or “exchange of commodities.”
    - Grow many of the following fruits and vegetables that consumers in developed countries demand:
      - Apples
      - Asparagus
      - Cherries
      - Lettuce
      - Mushrooms
      - Potatoes

# Where is Agriculture Distributed?

- Agriculture in Developed Regions
  - Commercial Gardening and Fruit Farming
    - Some of the fruits and vegetables are sold fresh to consumers, but most are sold to large processors for canning or freezing.
    - Truck farms are highly efficient large-scale operations that take full advantage of machines at all stages of the growing process.
    - Labor costs are kept down by hiring migrant farm workers.
    - Specialization in a few crops is common.

# Where is Agriculture Distributed?

- Agriculture in Developed Regions
  - Grain Farming
    - Distinguished from mixed crop and livestock farming, because crops are grown primarily for human consumption.
    - Farms sell their output to manufacturers of food products, such as breakfast cereals and bread.
    - Characteristics of a Typical Grain Farm
      - Heavily mechanized
      - Farms large in areal extent
      - Oriented to consumer preferences

# Where is Agriculture Distributed?

- Agriculture in Developed Regions
  - Mediterranean Agriculture
    - Every site practicing this form of agriculture borders a sea, and most are on west coasts of continents.
      - Prevailing sea winds provide moisture and moderate the winter temperatures.
    - Farmers derive a smaller percentage of income from animal products.
    - Most crops are grown for human consumption.
      - *Horticulture*, which is the growing of fruits, vegetables, and flowers, and tree crops form the commercial base.
    - Along the Mediterranean Sea, olives and grapes are two most important cash crops.
      - Approximately half of the land here is used to grow cereals.



# Where is Agriculture Distributed?

- Agriculture in Developed Regions

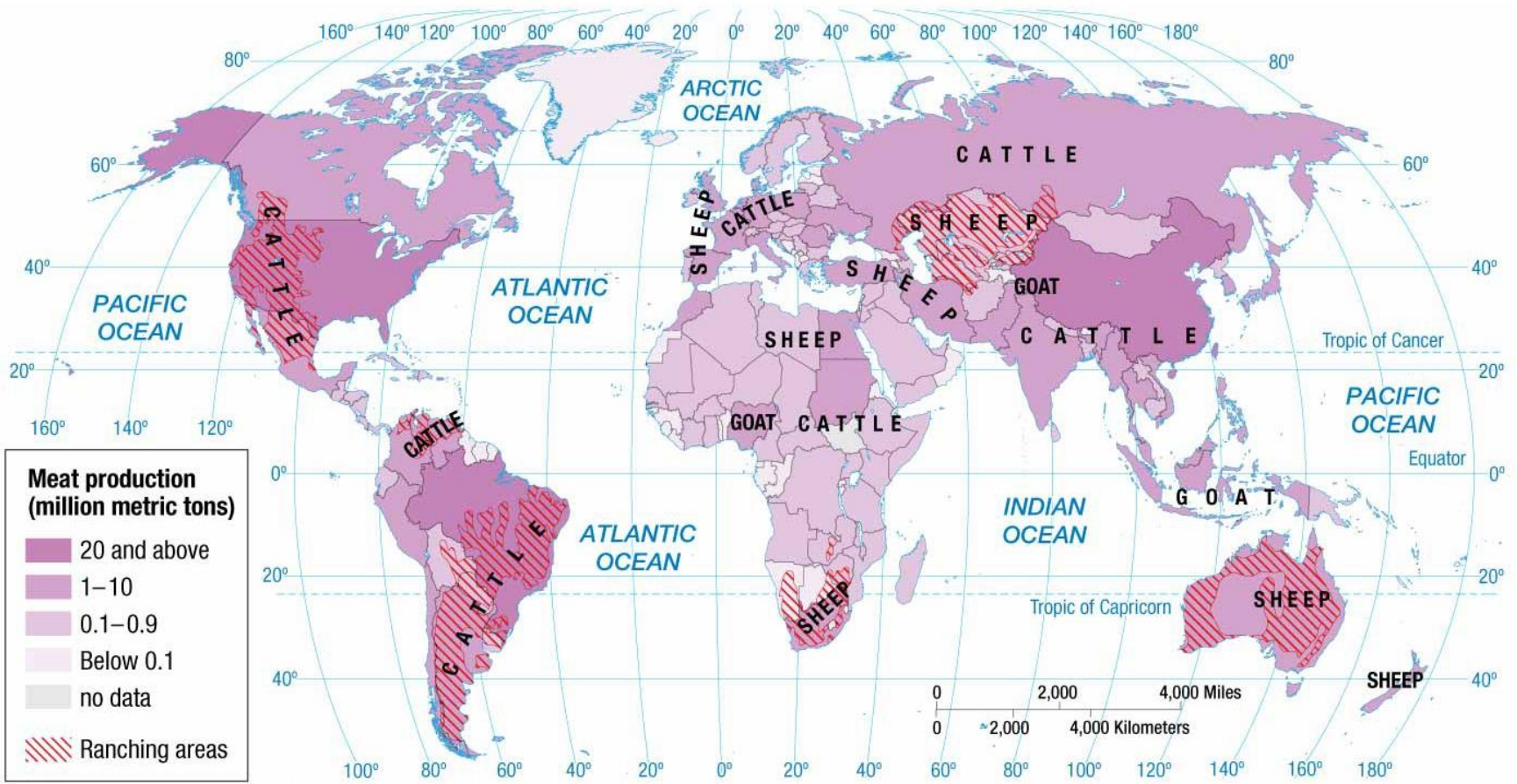
- Livestock Ranching

- *Ranching* is the commercial grazing of livestock over an extensive area.
    - Well suited for semiarid or arid land
    - Practiced in developed countries where vegetation is too sparse and soil too poor to support crops.
    - Historically, ranchers sought to move their cattle from Texas to Chicago, because the cattle were worth more money farther north.
    - Today, ranching has become part of the meat-processing industry where new methods of breeding and sources of water and feed are embraced.









# Why Do Farmers Face Economic Difficulties?

- Challenges for Farmers in Developing Countries
  - Subsistence farmers must feed an increasing number of people because of rapid population growth in developing countries.
    - Food supply increased through intensification of production via new farming methods and leaving land fallow for shorter periods of time.



# Why Do Farmers Face Economic Difficulties?

- Challenges for Farmers in Developing Countries
  - Subsistence farmers must grow food for export instead of for direct consumption due to the adoption of the international trade approach to development.
    - Consumers in developed countries are willing to pay high prices for fruits and vegetables that would otherwise be out of season locally.

# Why Do Farmers Face Economic Difficulties?

- Challenges for Farmers in Developed Countries
  - Overproduction in Commercial Farming
    - Commercial farmers suffer from low incomes, because they are capable of producing more food than is demanded by consumers in developed countries.
      - Demand is stagnant in developed countries because of low population growth.

# Why Do Farmers Face Economic Difficulties?

- Challenges for Farmers in Developed Countries
  - Overproduction in Commercial Farming
    - U.S. Government has formed policies that attempt to address excess production.
      - Farmers are encouraged to avoid producing crops that are in excess supply.
      - The government pays farms when certain commodity prices are low.
      - The government buys surplus production and sells or donates it to foreign governments.



# Why Do Farmers Face Economic Difficulties?

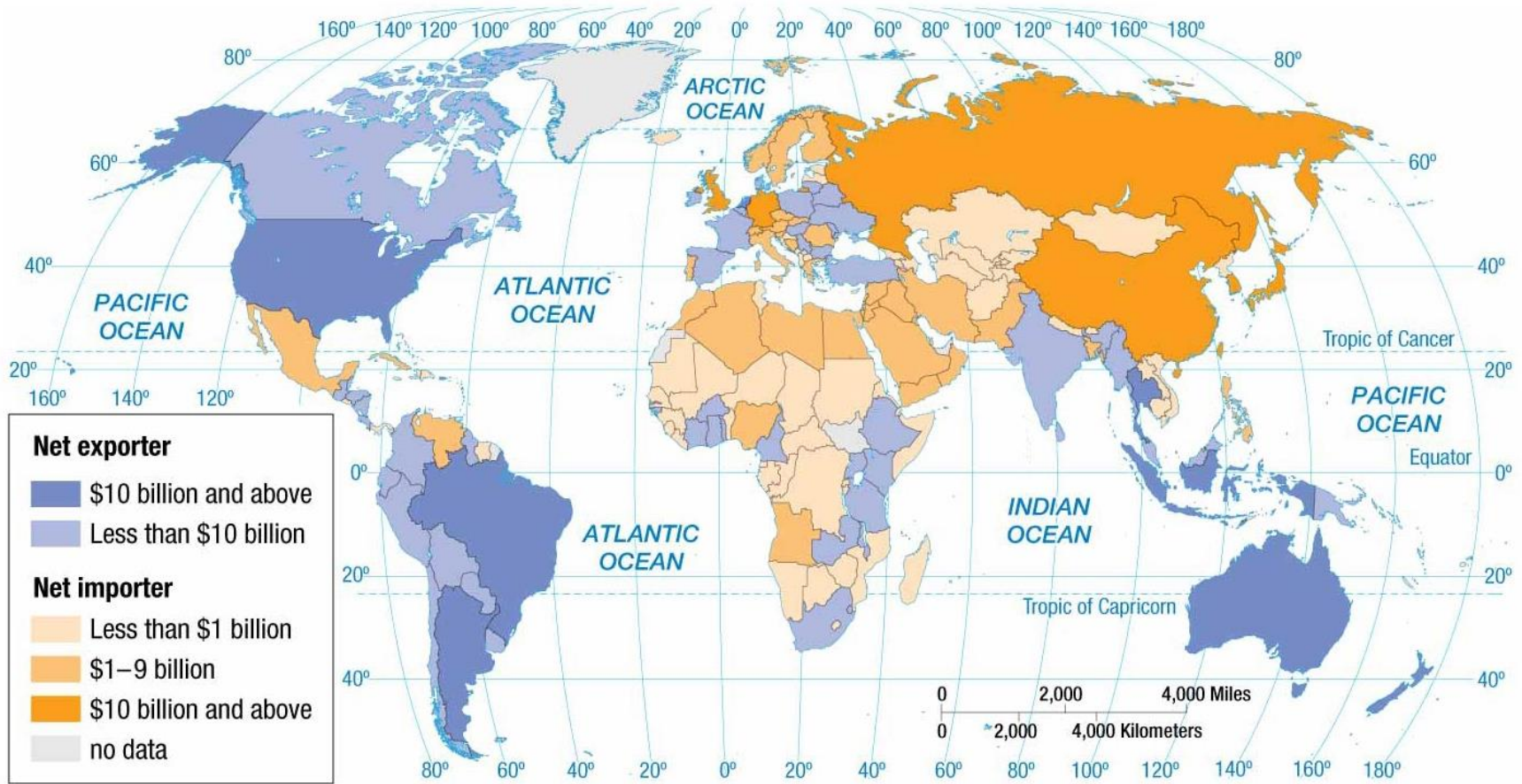
- Challenges for Farmers in Developed Countries
  - Importance of Access to Markets
    - Geographers use the von Thünen model to help explain the importance of proximity to market in the choice of crops on commercial farms.
      - Specific crops are grown in different rings around cities
        - » 1<sup>st</sup> ring: Highly perishable foods e.g. milk
        - » 2<sup>nd</sup> ring: Items more difficult to transport e.g. wood
        - » 3<sup>rd</sup> ring: Various crops and pasture lands
        - » 4<sup>th</sup> ring: Spacious lands for animal grazing.
    - von Thünen's model can be scaled up for national and global markets.

# Why Do Farmers Face Economic Difficulties?

- Strategies to Increase the World's Food Supply
  - Four strategies are being employed to distribute food to everyone in the world:
    - Increasing exports from countries with surpluses
    - Expanding the land area used for agriculture
    - Expanding fishing
    - Increasing the productivity of land now used for agriculture

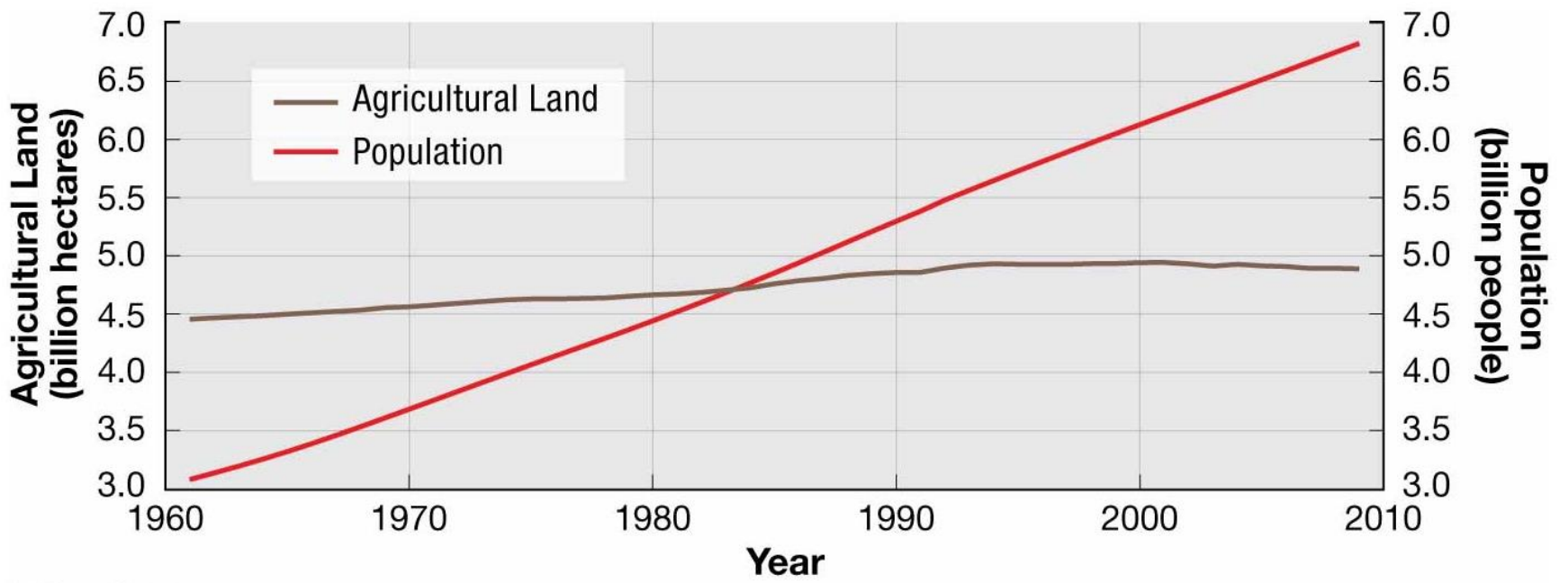
# Why Do Farmers Face Economic Difficulties?

- Strategies to Increase the World's Food Supply
  - Increasing Exports from Countries with Surpluses
    - On a global scale, agricultural products are moving primarily from the Western Hemisphere to the Eastern Hemisphere.
      - U.S. remains the world's leading exporter of grain
        - » ½ of the world's maize (corn) exports.
        - » Global share has decreased from 18 to 19 percent in the 1970s to 10 to 11 percent in the 21<sup>st</sup> century because of more rapid increased in agricultural exports from Latin America and Southeast Asia.



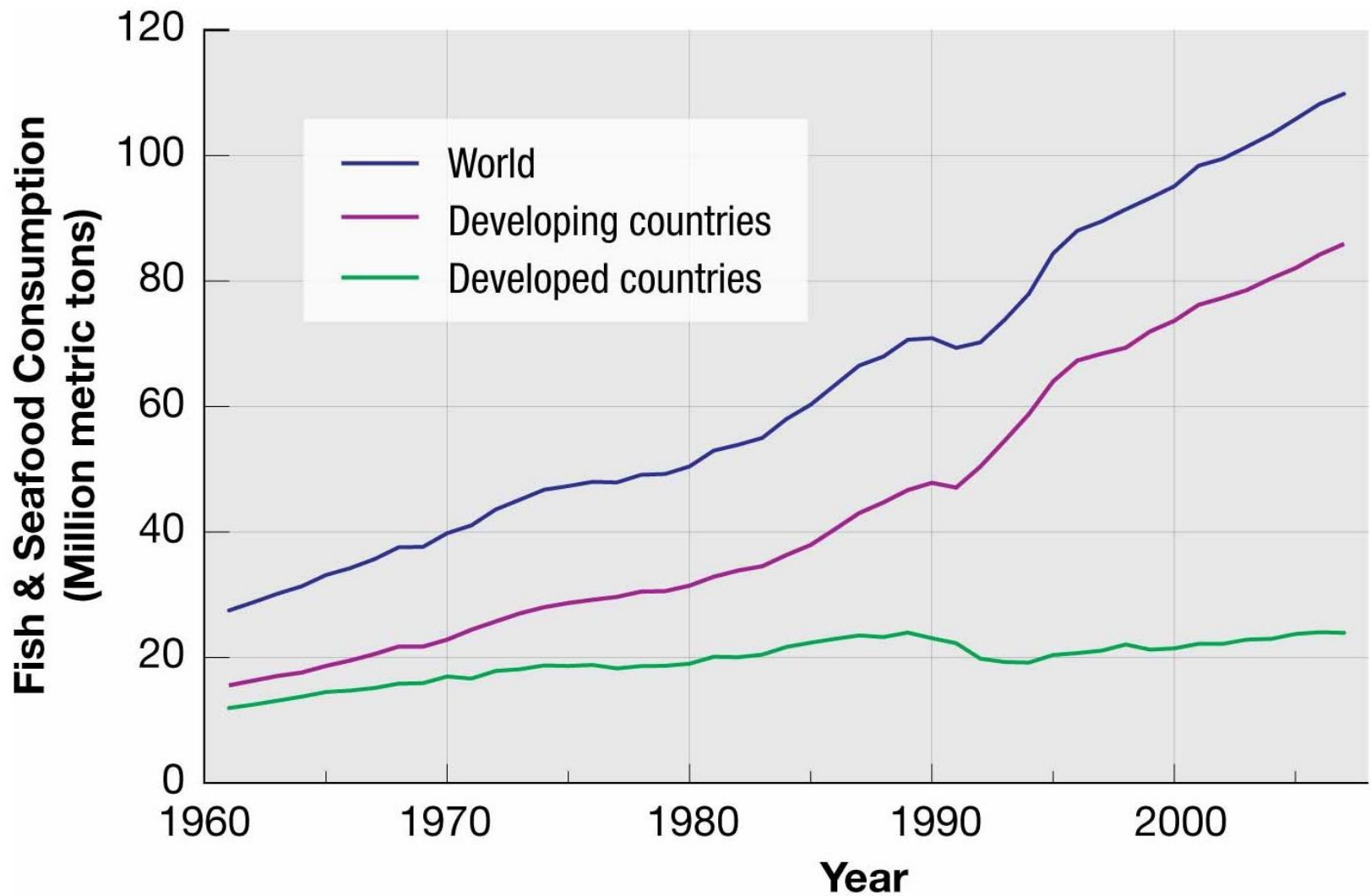
# Why Do Farmers Face Economic Difficulties?

- Strategies to Increase the World's Food Supply
  - Expanding Agricultural Land
    - Today, few scientists believe that further expansion of agricultural land can feed the growing world population.
    - Farmland in some regions is being abandoned for lack of water.
      - Other land degradation that makes land resemble a desert-like state caused by humans is known as *desertification*.

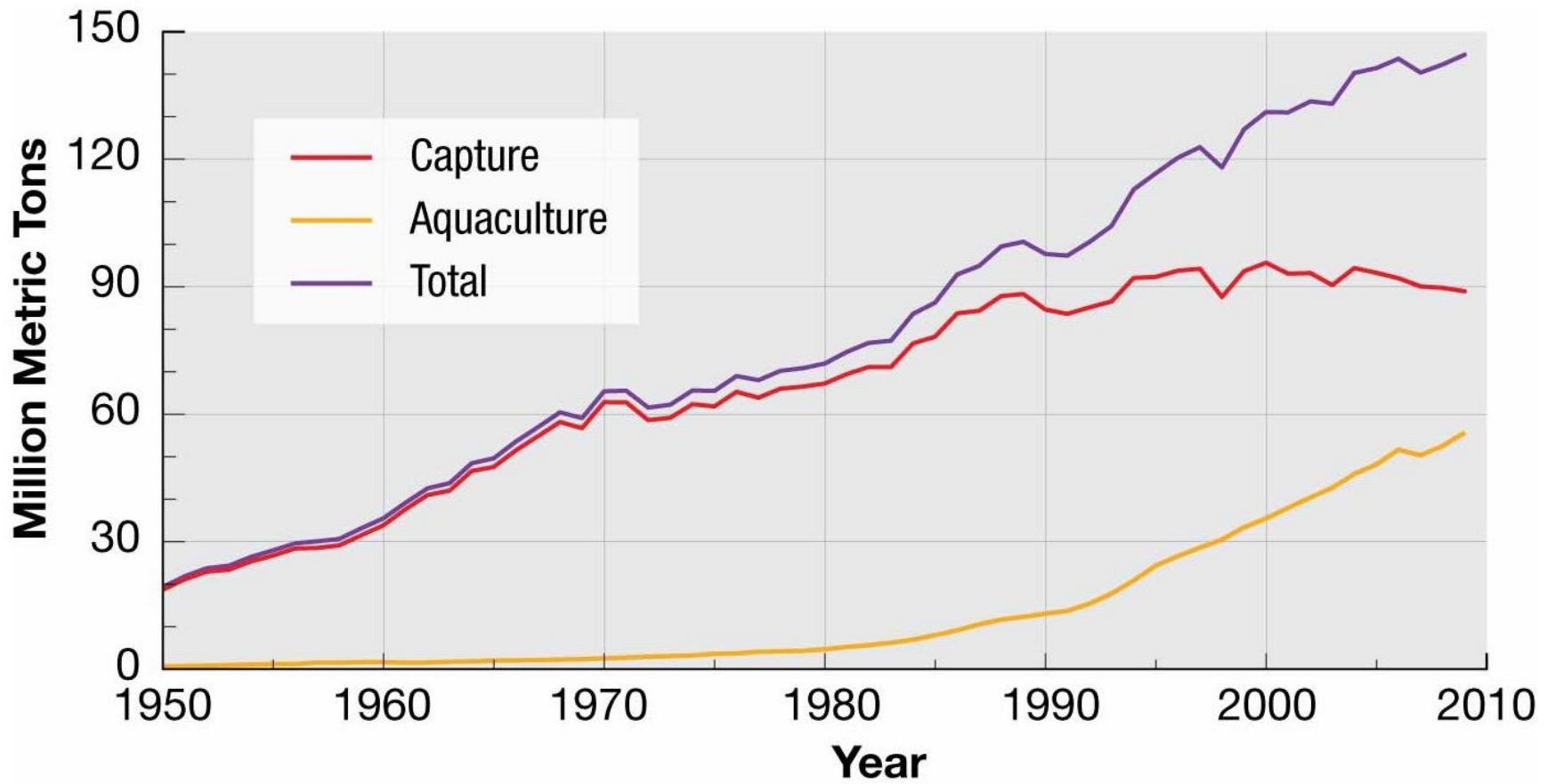


# Why Do Farmers Face Economic Difficulties?

- Strategies to Increase the World's Food Supply
  - Expanding Fishing
    - *Aquaculture*, or *aquafarming* is the cultivation of seafood under controlled conditions, whereas fishing is the capture of wild fish and other seafood.
    - Human consumption of fish and seas has increased from 27 million metric tons in 1960 to 110 million metric tons in 2010.
    - Global fish production has increased from approximately 36 to 145 million metric tons.
      - Only 2/3 of fish caught from the ocean is consumed directly by humans.

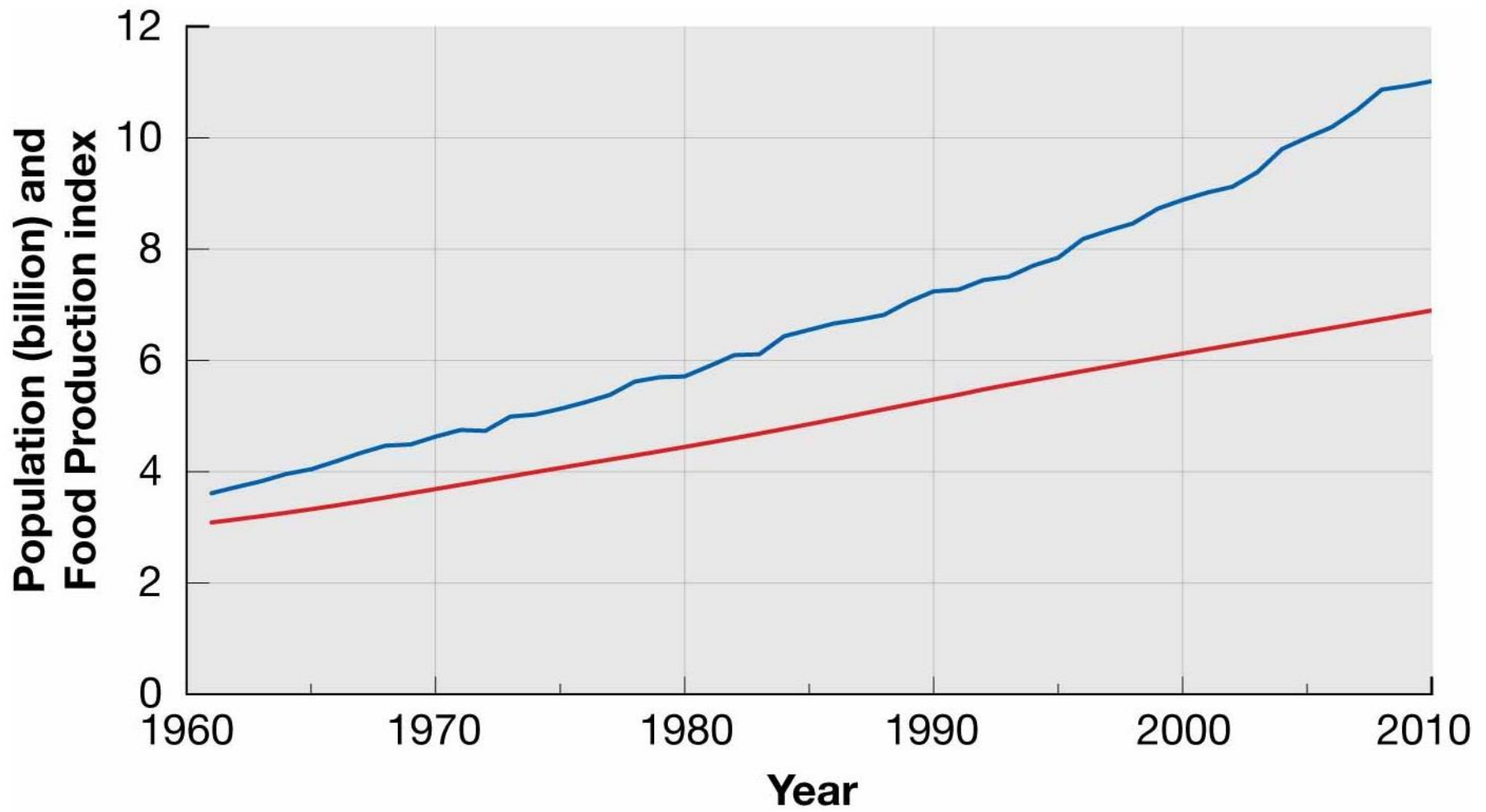






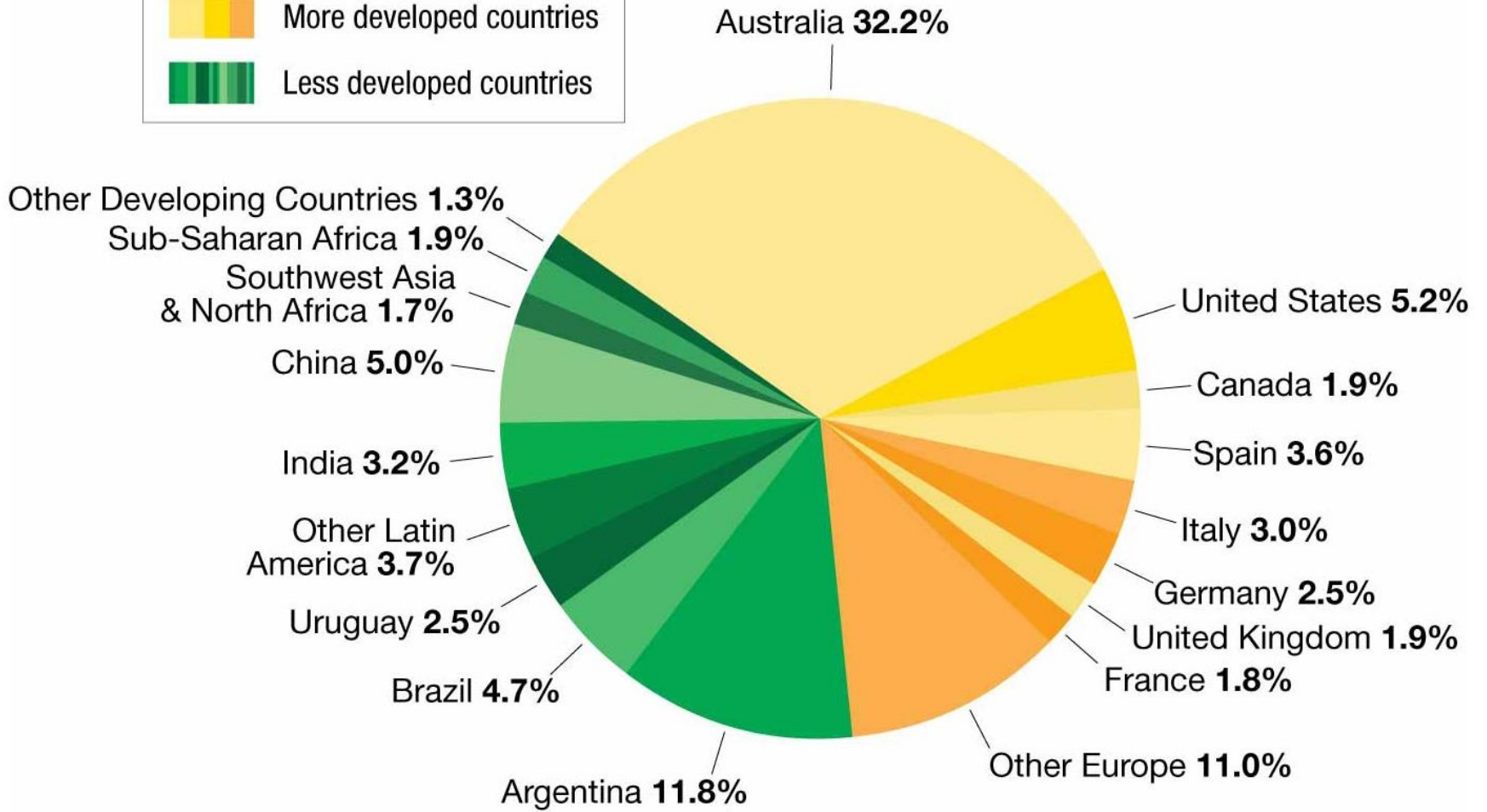
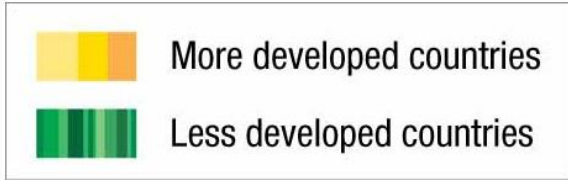
# Why Do Farmers Face Economic Difficulties?

- Strategies to Increase the World's Food Supply
  - Increasing Productivity
    - Invention and rapid diffusion of more productive agricultural techniques during the 1970s and 1980s is called the *green revolution*.
      - Introduced new higher-yield seeds
      - Expanded use of fertilizers
    - Green revolution allowed agricultural productivity to outpace population growth.
      - “miracle wheat seed”
      - “miracle rice seed”
      - “miracle high-yield maize (corn)”



# Why Do Farmers Face Economic Difficulties?

- Strategies to Increase the World's Food Supply
  - Sustainable Agriculture
    - *Sustainable agriculture* are agricultural practices that preserve and enhance environmental quality.
    - Three principal practices distinguish sustainable picture (and, at its best, organic farming) from conventional agriculture:
      - Sensitive land management
      - Limited use of chemicals
      - Better integration of crops and livestock



# Summary

- Prior to the development of agriculture, people survived by hunting animals, gathering wild vegetation, and fishing. Current agricultural practices vary between developed and developing countries.
- Everyone needs food to survive. The amount of food and dietary composition of the food vary between developed and developing countries.

# Summary

- Most people in developing countries are subsistence farmers, growing crops primarily to feed themselves. Commercial farming is primarily practiced in developed countries.
- Farmers face many challenges to meeting the dietary needs of a rapidly growing population when they are forced to rely on poorer quality land to farm, as a result of land degradation processes and suburban sprawl taking away prime farmland.