

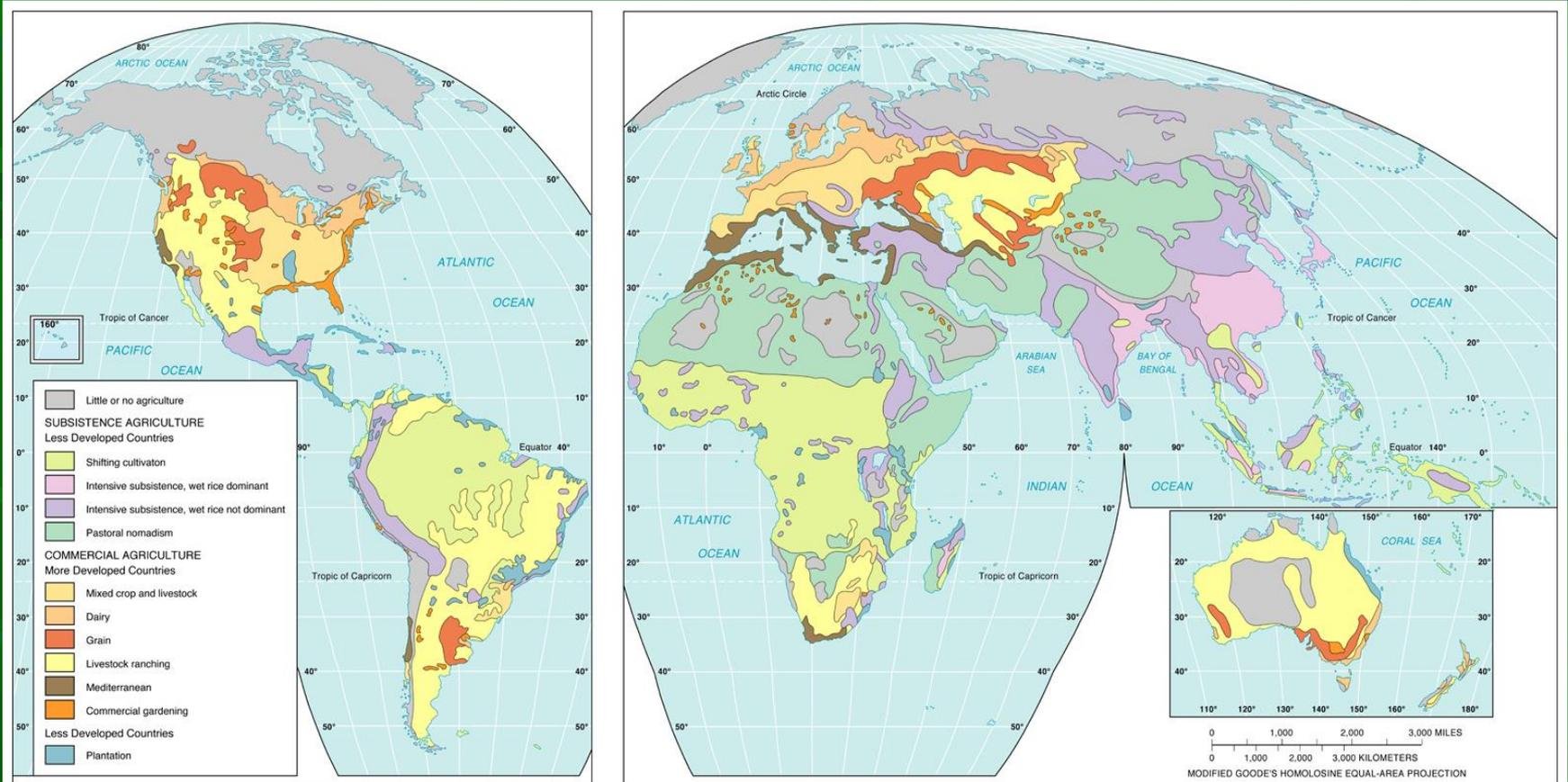
Agriculture

Key Issue Two: Where are agricultural regions in less developed countries?

Key Issue 2: Agriculture in Less Developed Countries

- Shifting cultivation
 - Characteristics of shifting cultivation
 - Future of shifting cultivation
- Pastoral nomadism
 - Characteristics of pastoral nomadism
 - Future of pastoral nomadism
- Intensive subsistence agriculture
 - Intensive subsistence with wet rice dominant
 - Intensive subsistence with wet rice not dominant

World Agriculture Regions



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Locations of the major types of subsistence and commercial agriculture.

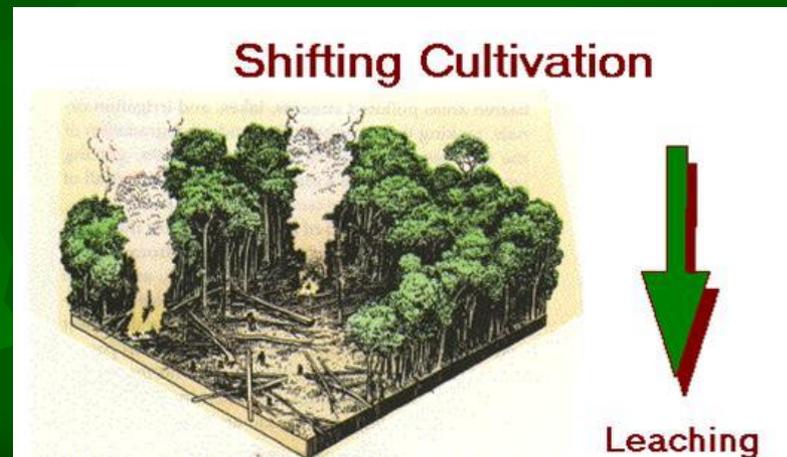
Shifting Cultivation

- Shifting cultivation is practiced in much of the world's Humid Low-Latitude, or A, climate regions, which have relatively high temperatures and abundant rainfall.
- It is called shifting cultivation rather than shifting agriculture because “agriculture” implies greater use of tools and animals and more sophisticated modification of the landscape.
- Shifting cultivation has two distinguishing hallmarks: farmers clear land for planting by slashing vegetation and burning the debris; and farmers grow crops on a cleared field for only a few years.
- People who practice shifting cultivation generally live in small villages and grow food on the surrounding land, which the village controls.



The Process of Shifting Cultivation

- Each year villagers designate (an area) for planting.
- They must remove the dense vegetation that typically covers tropical land.
- Using axes, they cut most of the trees, sparing only those that are economically useful.
- The debris is burned under carefully controlled conditions.
- Rains wash the fresh ashes into the soil, providing needed nutrients.
- The cleared area is known by a variety of names in different regions, including swidden, ladang, milpa, chena, and kaingin.
- The cleared land can support crops only briefly, usually three years or less.
- Villagers... leave the old site uncropped for many years.
- The villagers will return to the site, . . . perhaps as few as 6 years or as many as 20 years later, to begin the process of clearing the land again.
- In the meantime, they may still care for fruit-bearing trees on the site.



Shifting Cultivation in Guatemala



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Dense vegetation has been cut and is being burned to open land for farming.

Land Clearing in Colombia



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Bulldozers are used to plow a road through the rain forest in Colombia.

Crops of Shifting Cultivation

- The precise crops grown by each village vary by local custom and taste.
- The predominant crops include upland rice in Southeast Asia, maize (corn) and manioc (cassava) in South America, and millet and sorghum in Africa.
- Yams, sugarcane, plantain, and vegetables also are grown in some regions.
- The Kayapo people of Brazil's Amazon tropical rain forest.. . plant in concentric rings.
- Plants that require more nutrients are located in the outer ring.
- It is here that the leafy crowns of cut trees fall when the field is cleared.
- Most families grow only for their own needs, so one swidden may contain a large variety of intermingled crops.
- Families may specialize in a few crops and trade with villagers who have a surplus of others.



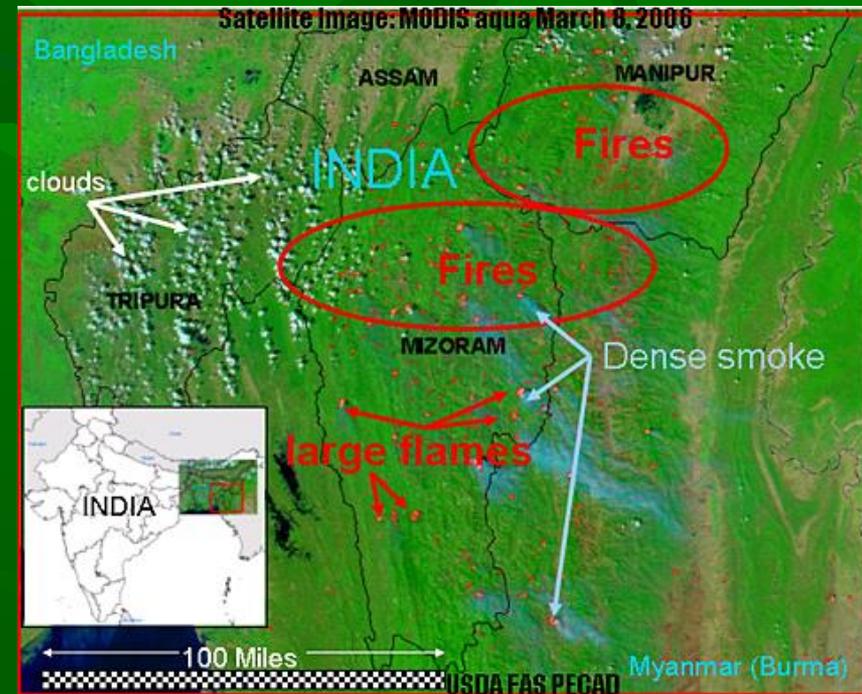
Ownership and Use of Land in Shifting Cultivation

- Traditionally, land is owned by the village as a whole rather than separately by each resident.
- Private individuals now own the land in some communities, especially in Latin America.
- Shifting cultivation occupies approximately one fourth of the world's land area, a higher percentage than any other type of agriculture.
- However, only 5 percent of the world's population engages in shifting cultivation.

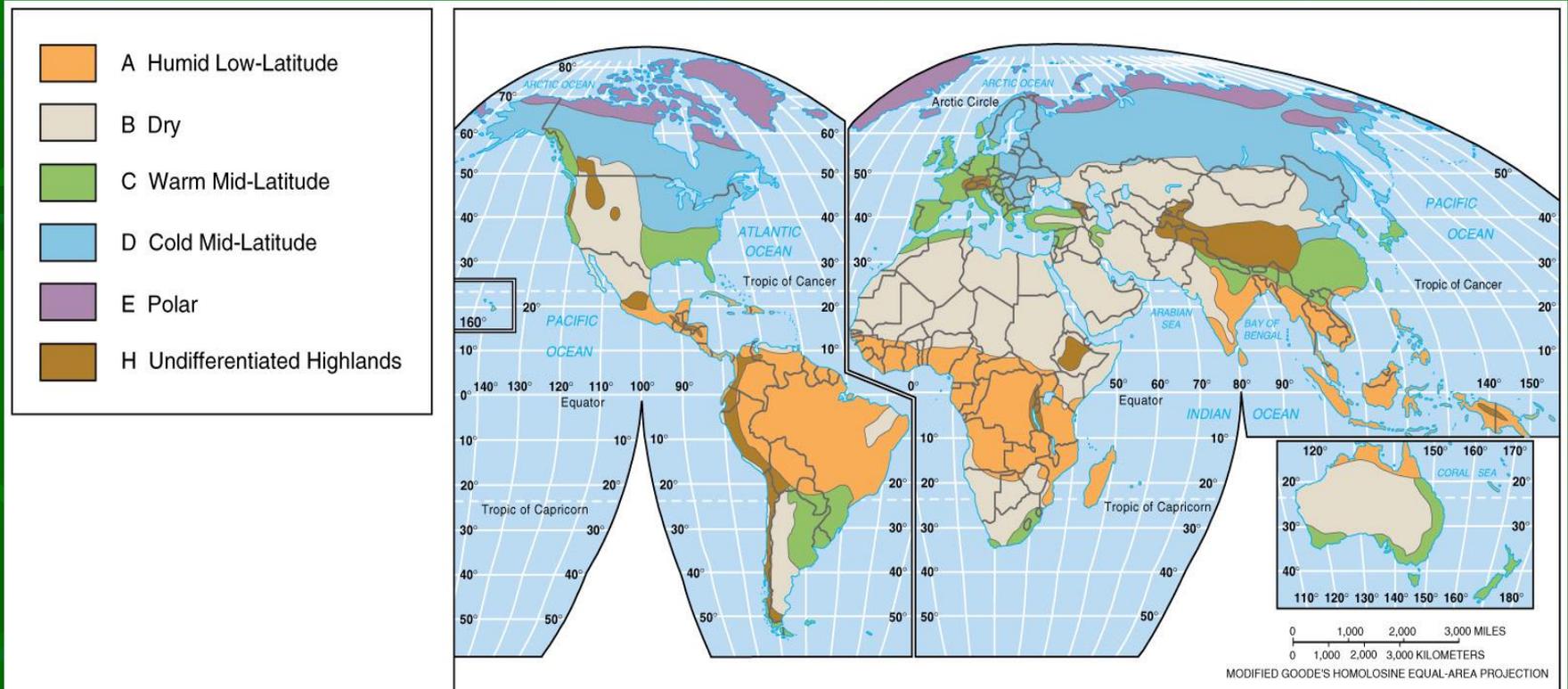


Future of Shifting Cultivation

- The percentage of land devoted to shifting cultivation is declining in the tropics at the rate of about 100,000 square kilometers (40,000 square miles), or 1 percent per year.
- The amount of Earth's surface allocated to tropical rain forests has already been reduced to less than half of its original area.
- Practices used in other forms of agriculture may damage the soil, cause severe erosion, and upset balanced ecosystems.
- Large-scale destruction of the rain forests also may contribute to global warming.
- When large numbers of trees are cut, their burning and decay release large volumes of carbon dioxide.
- Elimination of shifting cultivation could also upset the traditional local diversity of cultures in the tropics.
- The activities of shifting cultivation are intertwined with other social, religious, political, and various folk customs.



World Climate Regions



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Simplified map of the main world climate regions

Pastoral Nomadism

- Pastoral nomadism is a form of subsistence agriculture based on the herding of domesticated animals.
- The word pastoral refers to sheep herding.
- It is adapted to dry climates, where planting crops is impossible.
- Only about 15 million people are pastoral nomads, but they sparsely occupy about 20 percent of Earth's land area.

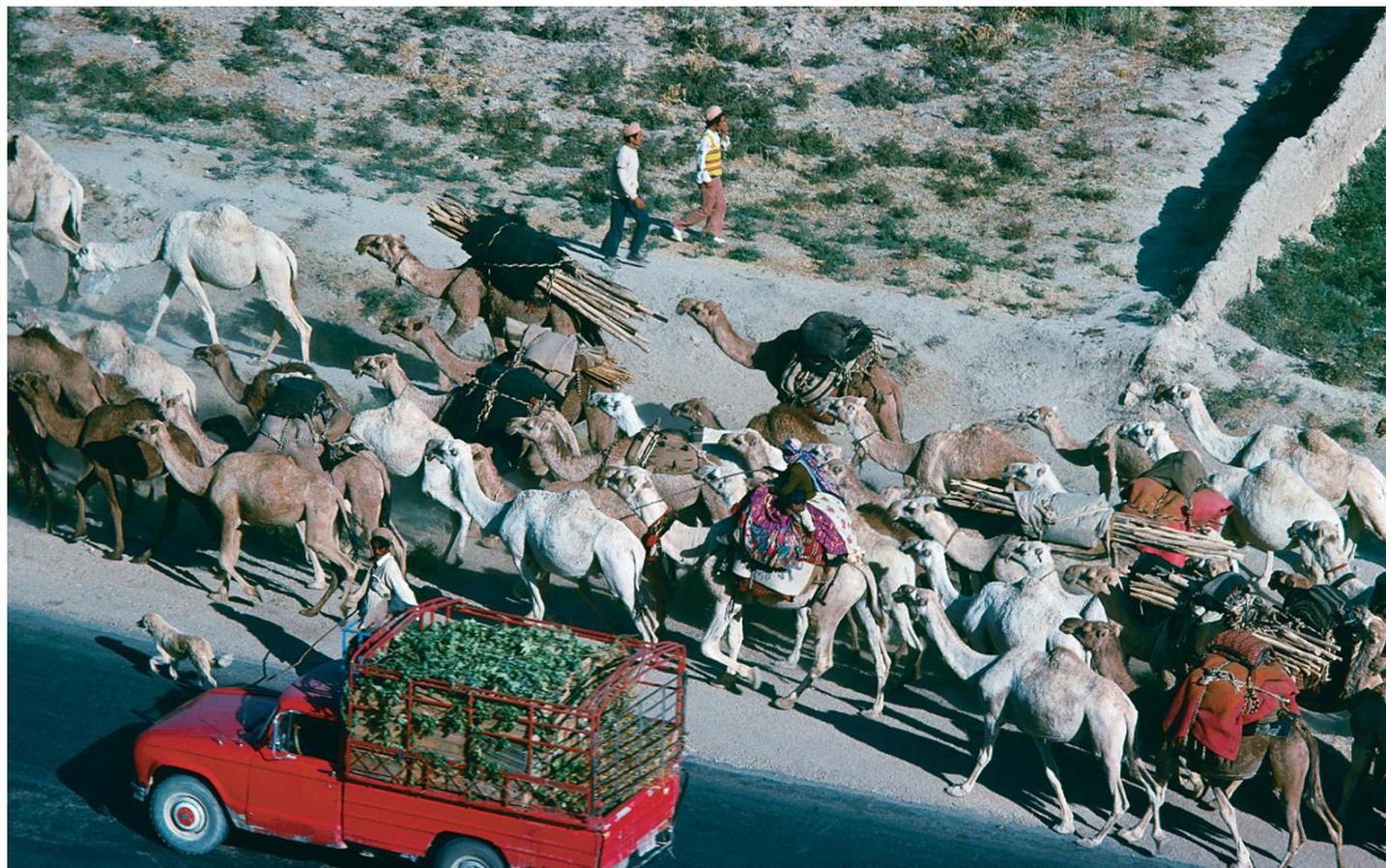


Characteristics of Pastoral Nomadism

- Pastoral nomads depend primarily on animals rather than crops for survival.
- The animals provide milk, and their skins and hair are used for clothing and tents.
- Like other subsistence farmers, though, pastoral nomads consume mostly grain rather than meat.
- Some pastoral nomads obtain grain from sedentary subsistence farmers in exchange for animal products.
- More often, part of a nomadic group—perhaps the women and children may plant crops at a fixed location while the rest of the group wanders with the herd.
- Other nomads might sow grain in recently flooded areas and return later in the year to harvest the crop.



Pastoral Nomads in Iran



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Qashqai nomads using paved roads to move their animals near Shiraz, Iran.

Choice of Animals

- Nomads select the type and number of animals for the herd according to local cultural and physical characteristics.
- The choice depends on the relative prestige of animals and the ability of species to adapt to a particular climate and vegetation.



Movements of Pastoral Nomads

- Pastoral nomads do not wander randomly across the landscape but have a strong sense of territoriality.
- Every group controls a piece of territory and will invade another group's territory only in an emergency or if war is declared.
- The precise migration patterns evolve from intimate knowledge of the area's physical and cultural characteristics.
- The selection of routes varies in unusually wet or dry years and is influenced by the condition of their animals and the area's political stability.
- Some pastoral nomads practice transhumance, which is seasonal migration of livestock between mountains and lowland pasture areas.



The Future of Pastoral Nomadism

- Nomads used to be the most powerful inhabitants of the drylands, but now, with modern weapons, national governments can control the nomadic population more effectively.
- Government efforts to resettle nomads have been particularly vigorous in China, Kazakhstan, and several Middle Eastern countries, including Egypt, Israel, Saudi Arabia, and Syria.
- Governments force groups to give up pastoral nomadism because they want the land for other uses.
- In the future, pastoral nomadism will be increasingly confined to areas that cannot be irrigated or that lack valuable raw materials.

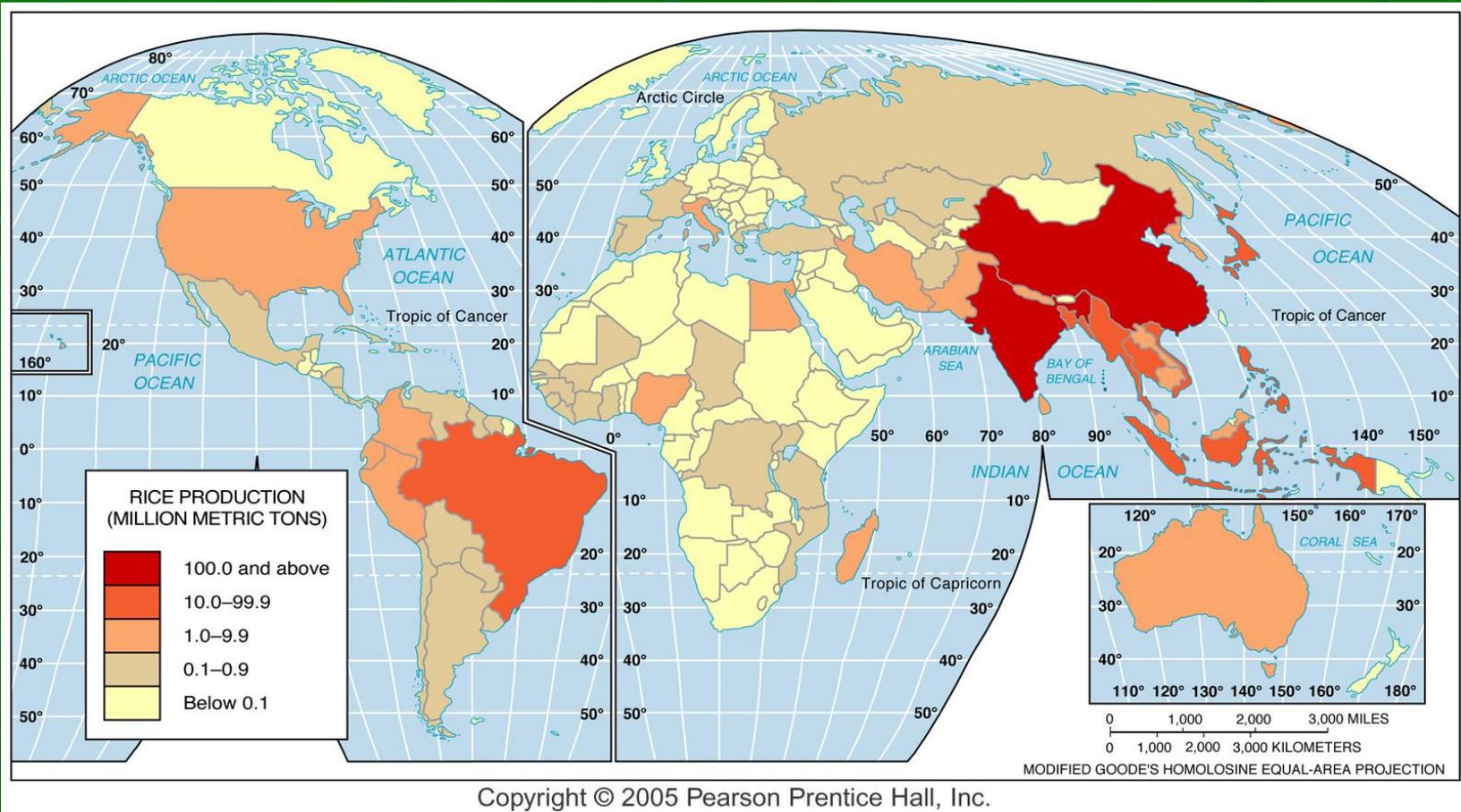


Intensive Subsistence Agriculture

- In densely populated East, South and Southeast Asia, most farmers practice intensive subsistence agriculture.
- The typical farm is much smaller than elsewhere in the world.
- Because the agricultural density the ratio of farmers to arable land—is so high in parts of East and South Asia, families must produce enough food for their survival from a very small area of land.
- They do this through careful agricultural practices, refined over thousands of years in response to local environmental and cultural patterns.
- Intensive subsistence farmers waste virtually no land.
- Paths and roads are kept as narrow as possible to minimize the loss of arable land.
- Little grain is grown to feed the animals.



World Rice Production



Asian farmers grow over 90% of the world's rice. India and China alone account for over half of world rice production.

Wet Rice Production

- Growing rice involves several steps: First, a farmer prepares the field for planting, using a plow drawn by water buffalo or oxen.
- The use of a plow and animal power is one characteristic that distinguishes subsistence agriculture from shifting cultivation.
- Then the plowed land is flooded with water. . . from rainfall, river overflow, or irrigation.
- The flooded field is called a sawah in the Austronesian language widely spoken in Indonesia, including Java.
- Europeans and North Americans frequently, but incorrectly, call it a paddy, the Malay word for wet rice.
- Wet rice is most easily grown on flat land, because the plants are submerged in water much of the time.



Wet Rice Terraces in Indonesia



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Terraces create flat land for wet (irrigated) rice on hilly land in Indonesia.

Rice Harvesting, Indonesia



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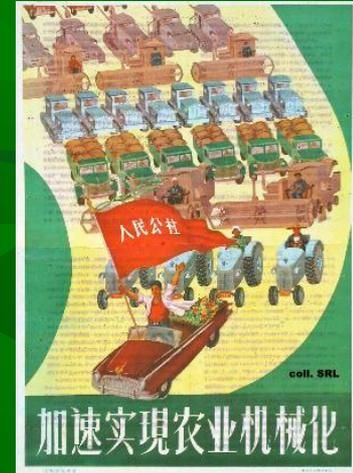
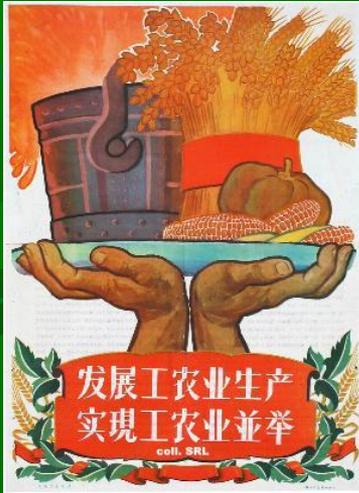
Wet rice is often harvested by hand in Asia.

Double cropping

- One method of developing additional land suitable for growing rice is to terrace the hillsides of river valleys.
- Land is used even more intensively in parts of Asia by obtaining two harvests per year from one field, a process known as double cropping.
- Double cropping is common in places having warm winters but is relatively rare in India, where most areas have dry winters.
- Normally, double cropping involves alternating between wet rice and wheat, barley, or another dry crop, grown in the drier winter season.



Chinese Communes



- In milder parts of the region, more than one harvest can be obtained some years through skilled use of crop rotation.
- Since the (Chinese) Communist Revolution in 1949, the government organized agricultural producer communes.
- By combining several small fields into a single large unit, the government hoped to promote agricultural efficiency.
- China has dismantled the agricultural communes.
- The communes still hold legal title to agricultural land, but villagers sign contracts entitling them to farm portions of the land as private individuals.
- Reorganization has been difficult because infrastructure was developed to serve large communal farms rather than small, individually managed ones.