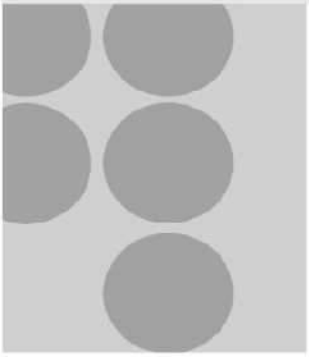
Chapter Eight

Agriculture



Chapter Concepts

- Feeding the World
- Agricultural Regions of the World
- Fishing and Forestry

Feeding the World

World agriculture is capable of providing everyone on the Earth with 2720 calories a day (more calories than the average 2100 recommended by the American Red Cross). However, 800 million people go to bed hungry every night.

Staple Foods

Staple foods are the major food sources of a particular region. They are typically energy rich, inexpensive, and easy to maintain over a long period of time. Most of the world's people rely on grains such as rice, wheat, oats, or millets as their main food source. In humid tropical and subtropical regions, root crops such as cassava are the staple foods.

Starvation

Starvation occurs when a person gets too little food to eat. On the other hand, malnutrition occurs when the body lacks certain nutrients or takes in too much unhealthy food. You can eat three meals a day and still be malnourished. World hunger affects one in seven people. War, drought and other natural disasters, and disease escalate world hunger by destroying crops and killing heads of households.

Absolute Poverty

Absolute poverty that is poverty that threatens a person's life. In global terms, this is a household earning less than the equivalents of US $1 a day. Disease hunger, and child labour plague people living in absolute poverty.

Relative Poverty

Relative poverty is having fewer resources than others in a community or country. Countries define their national poverty lines differently.

Agricultural Regions of the World

The first agricultural systems of the world were delineated by D. Whittlesey in 1936. He employed the following five criteria for the

demarcation of world agricultural regions, namely:

(1) crop and livestock combination

(2) intensity of land use

(3) processing and marketing of farm produce

(4) degree of mechanisation, and

(5) association of buildings and other structures associated with agriculture.

The agricultural regions of the world as delineated by Whittlesey have been given in **Fig. 8.1.**

1. **Subsistence Nomadic Herding**: Nomadic herding is an ecological or near ecological system of agriculture. It is carried on mainly to produce food for the family and to fulfill the needs of clothing, shelter and recreation. It is the most simple form of pastoralism. The nomadic herders are dependent on sheep, goats, camels, horses, and reindeers. The duration of stay of the nomads at one place and direction of their movement are governed by the availability of water and natural forage **(Fig. 8.2).**

At present, nomadic herding is mainly confined in Saharan Africa (Mauritania, Mali, Niger, Chad, Sudan, Libya, Algeria), the southwestern and central parts of Asia (Iran, Iraq, Jordan, Kuwait, Kazakhstan, Kirghizia, Oman, Saudi Arabia, Syria, Turkmenistan, and Yemen) , the northern parts of Asia (Norway, Sweden, Finland and Russia). Owing to harsh climate, these areas are unsuitable for cultivation. In the desert areas, the food of nomads is mostly of animal origin (milk, cheese, curd, butter, meat, etc.), while in the sub-Arctic regions, the Eskimos, Inuits, Lapps, and Yakuts, are dependent on reindeers, fish, etc. The population of nomadic herders is, however, decreasing and areas dominated by them in the past are shrinking. It appears that true nomadism is likely to survive only in few pockets of small isolated areas of the above mentioned regions.

2. Livestock Ranching: Livestock ranching is carried on in the region with relatively flat surface and plains where grass grows luxuriously. It is mostly practised in the temperate and tropical grasslands steppes (Eurasia), praries (North America), pampas (Argentina and Uruguay), velds (South Africa), downs (Australia), savanna (Sudan), llanose (Venezuela), and compose (Brazil). The leading areas of commercial grazing are the grasslands of North America, South America, Australia, New Zealand, and South Africa.

The prairies grasslands have thousands of ranches with more than 1000 acres each. The cattle include white-faced Hereford cattle breed, the black and white Friesian cows, the Jersy cows and the superior breeds of sheep. Every year millions of cattle and sheep are fattened and transported to large slaughter houses **(Fig. 8.3)**.

3. Shifting Cultivation (Slash and Burn or Jhuming): The history of shifting cultivation is as old as the history of agriculture. Shifting cultivation is a primitive form of soil utilisation. It is practiced usually in the tropical rain forests **(Figs. 8.4 and 8.5).** Following are the main characteristics of shifting cultivation:

(i) Land belongs to the community.

(ii) Farmers grow crops for the family consumption.

(iii) It is done with fire, digging sticks, hoe and sackle.

(iv) There is no use of draught animals.

(v) No use of manures and fertilizers.

(vi) Mixed cropping (about a dozen of crops are sown mixed).

(vii) The settlements are fixed, but the fields are rotated after almost every year.

(viii) The rotation cycle of fields varies from 10 to 25 years.

(ix) The intensity of agriculture is very low.

(x) It is a great catalytic force for community life. The basic axiom of shifting cultivators is *from each according to his capacity and to each according to his needs.*

4. Intensive Subsistence Agriculture: Subsistence agriculture is a type of farming in which crops grown are consumed by the grower and his family. It is mostly done in the countries of Monsoon Asia and Africa (**Fig. 8.6**). The main characteristics of intensive subsistence agriculture are as under:

(i) Small size of holding
(ii) Small size of fields
(iii) Scattered fields
(iv) Use of draught animals
(v) Use of domestic labour
(vi) Dominance of cereal crops
(vii) General indebtedness

5. Plantation Agriculture

The term 'plantation agriculture' was originally applied specifically to the British settlements in America and then to any large estate in North America, West Indies and South East Asia which was cultivated mainly by Negro and other coloured labourers from Asia and Africa. Plantation agriculture is practiced in the hot and humid subtropical regions of the world (**Fig. 8.7**).The main characteristics of plantation agriculture are:

(i) It is practised mainly in the tropical countries to grow cash crops.
(ii) The size of plantation estates is generally large.
(iii) It is a specialised commercial cultivation.
(iv) Land in plantation agriculture is devoted to rubber, oil-palm, copra, cotton, tea, coffee, hemp, spices, cocoa, pineapple, banana, sugarcane hemp and jute.
(v) It is executed with specialised skill, and wherever, possible with the application of machinery.
(vi) There is heavy application of fertilizers, insecticides and pesticides.
(vii) It aims at high yields.
(viii) In most of the plantation estates there are factories to produce the marketable products.
(ix) It is largely based on the exploitation of cheap labour.
(x) The final product have to be fully processed and standardised to meet the world demand and specifications.

6. Extensive Agriculture

Extensive agriculture is carried on in the mid-latitudes, well away from maritime influence, recording less than 60 cm of rainfall. It is best developed in the steppes of Russia, Central Asia, Central and Western Plains of North America. Following are the main characteristics of extensive agriculture:

(i) It is highly mechanised.
(ii) The size of holdings is large, ranging from 240 to 16,000 hectares.
(iii) It employs little labour.
(iv) The per hectare yield is low.
(v) It is practiced in the sparsely populated areas.
(vi) Monoculture of wheat is the dominant cropping pattern. Among other crops, barley, oats, rye, flax and oilseeds are important.

7. Mediterranean Agricultural System

This type of agriculture is confined to the coastal areas of Mediterranean Sea in Europe, Asia Minor, California, Central Chile, Cape Province of South Africa and south-west of Western Australia including Tasmania. The main characteristics of Mediterranean agriculture are:

(i) Specialise in the orchards of citrus fruits. Cereals are subordinated to tree crops.
(ii) Wheat and barley are the main crops during the winter season.
(iii) The size of holdings vary from medium to large.
(iv) The shape of fields is irregular.
(v) Irrigation is done specially during the summer season.
(vi) Vines, figs, olive, etc. occupy a significant part of the agricultural land.

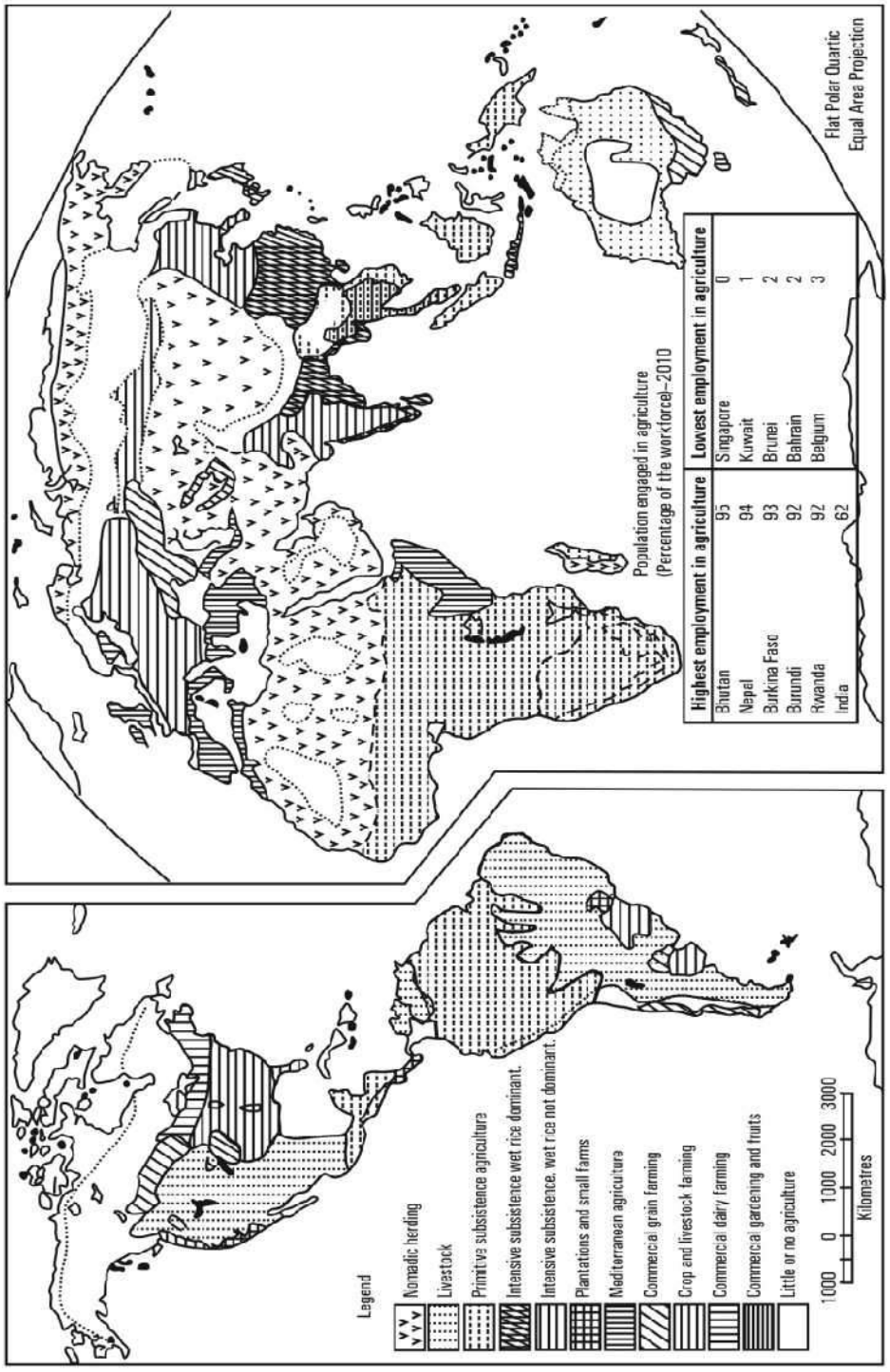


Fig. 8.1 – World Agricultural regions (after D.Whittlesey)

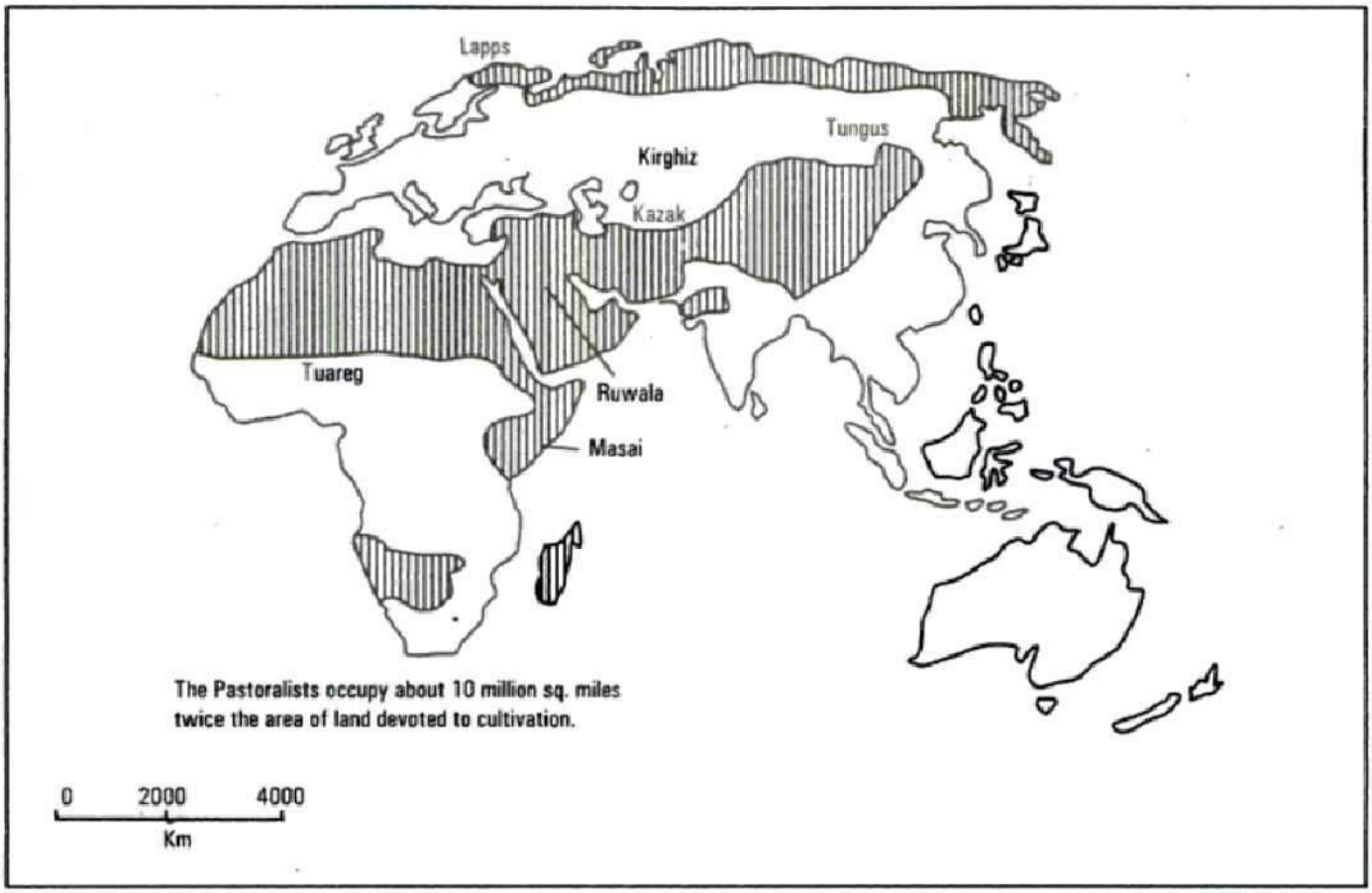


Fig. 8.2 – Subsistence Nomadit Herding

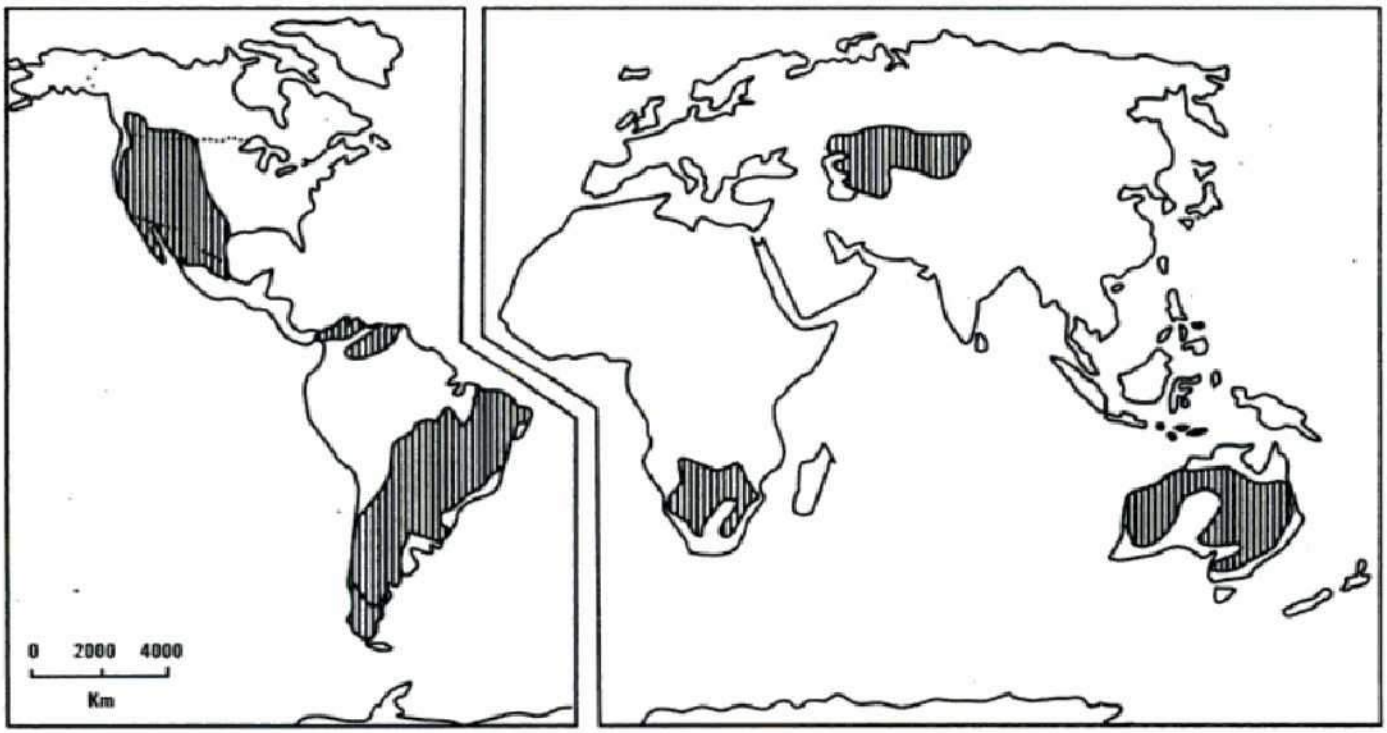


Fig. 8.3 – Livestock ranching

Fig. 8.4 – Shifting cultivation

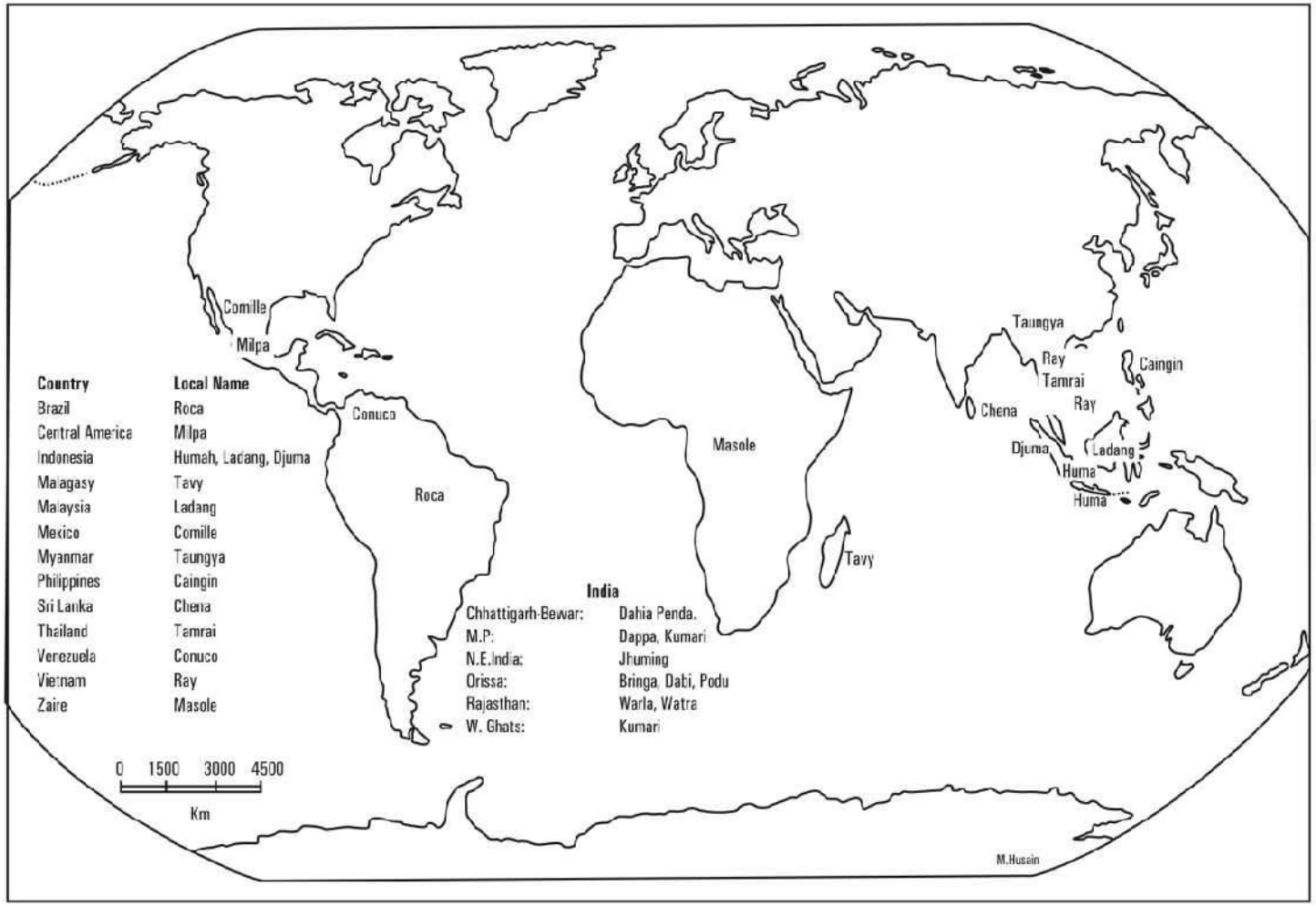


Fig. 8.5 – Local names of shifting cultivation

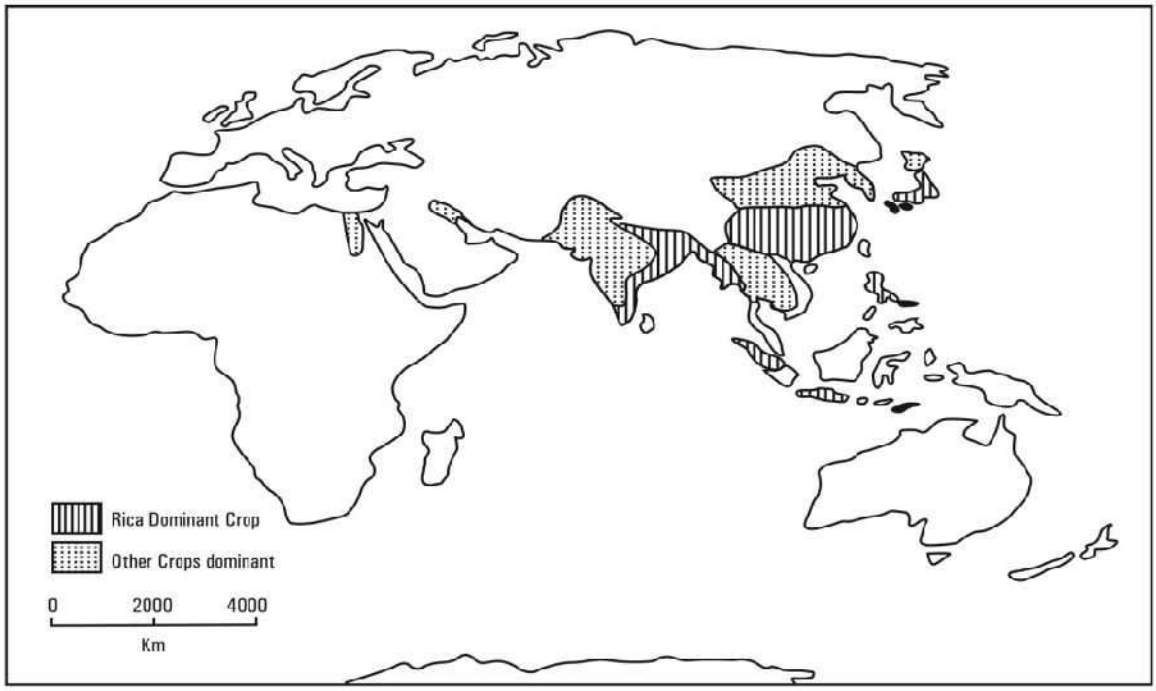


Fig. 8.6 – Intensive subsistence agriculture

(vii) In the hilly areas sheep rearing is common.

(viii) In general the farming community is well off.

8. Mixed Farming or Commercial Crops and Livestock: Mixed farming is a type of agriculture which involves both crops and livestock. It is found throughout Europe including Eurasia, North America (east of 90° longitude). The main characteristics of mixed farming are given below:

(i) It is practiced in the densely populated and urbanised regions of the temperate latitudes.

(ii) The size of holdings is large.

(iii) It is highly mechanised.

(iv) It yields high agricultural returns.

(v) Crops are grown to be fed to livestock, pigs and poultry.

(vi) Agricultural land is devoted to fodder (hay) and maize crops.

(vii) In winter season, forage crops, hay, solid feed and concentrates are fed to livestock.

(viii) The livestock require daily attention of the farmers.

(ix) The wages of labour are high, which made this increasingly difficult to keep a variety of livestock on the farms.

(x) The per capita income and the standard of living of the of mixed farmers are high.

9. Dairy Farming: The keeping of cattle for milk and milk products (butter, cheese, curd, condensed and powder milk) is known as dairy farming. It is practised mainly in the temperate countries of Europe, North and South America, South Africa, Australia and New Zealand. The main characteristics of dairy farming are given below:

Fig. 8.7 – World – Major plantation crops.

Fig. 8.8 – Main rice producing regions of the world

(i) Dairying is a capital intensive farming. It needs huge amount to develop the infrastructure for livestock.

(ii) It is highly mechanised.

(iii) It needs long hours for the farmers to look after the cows.

(iv) There is a fixed ratio of cattle and arable land. For example, in Britain the ratio is one cow per acre.

(v) Dairying fetches handsome amount to the farmers. Consequently, the standard of living of the dairy farmers is fairly high.

10. Horticulture (Truck Farming)

Specialised cultivation of vegetables, fruits and flowers is known as horticulture or truck farming. It is practiced mainly in the highly industrialised, urbanised regions of North East USA, Canada (Lakes Region), and in the suburbs of the metropolitan regions of North-West Europe, Europe, Australia and New Zealand. In urbanised districts of the developed countries, there is a heavy demand of vegetables and fruits. The main characteristics of this type of farming are given below:

1. The size of holdings is relatively small.
2. These orchards are well connected by metalled roads.
3. The truck farms are generally at an over night distance from the markets.
4. It is a capital intensive and highly mechanised type of farming.
5. This type of agriculture is done on scientific lines.
6. Harvesting of vegetables and fruits is done manually.

Table 8.1: *Major Crops of the World*

Crop	*Geographical Conditions Required*	*Leading Producers*
Rice	Temp.20°-25° C; rainfall minimum 100 cm; Clayey soil	China, India, Indonesia, Bangladesh, Thailand, Japan, Myanmar, Vietnam, Malysia. Leading exporter in the world: Thailand **(Fig. 8.8)**.
Wheat	Temp.10°C to 25°C; rainfall 50-75 cm; Loamy well drained soil.	China, India, U.S.A., Russia, Australia, Canada, France, Turkey. Leading exporter in the world: USA. **(Fig. 8.9).**
Barley	Temp.10° to 25°C; rainfall 50 to 75 cm; Well drained loamy soil.	Russia, China, Canada, USA, France, U.K., Germany, Turkey. Leading exporter in the world: Russia **(Fig.8.10).**
Maize	Temp. 15°C to 25°C; rainfall 40-75 cm; Well drained loamy soil.	U.S.A., China, Brazil, Mexico, Russia, Romania, India, South Africa. Leading exporter in the world USA **(Fig. 8.11).**
Millet	Temp. 20° to 27°C; rainfall 50 to 75 cm; Well drained loamy soil.	China, U.S.A., India, Nigeria, Ukraine, Thailand, Russia, Turkey. Leading exporter in the world: USA **(Fig. 8.12).**
Soybean	Temp. 15° to 22°C; rainfall 20 to 60 cm; Well drained loamy soil.	China, U.S.A., Brazil, Argentina, Ukraine, Japan, Russia, Columbia. Leading exporter in the world U.S.A **(Fig. 8.13).**

Sugarbeet	10° C to 20°C; rainfall 40 to 50 cm; Well drained loamy soil.	France, USA, Germany, Russia, China, Ukraine, Poland, Turkey. Leading exporter in the world: France **(Fig. 8.14).**
Cotton	Temp. 18° C to 25°C; rainfall 50 to 75 cm; Frost free days 180.	China, USA, India, Brazil, Pakistan, Uzbekistan, Egypt, Turkey. Leading exporter in the world: USA **(Fig. 8.15).**
Rubber (Natural)	Temp. 22°C to 27°C; rainfall 150 to 200 cm; Well drained alluvial soil.	Thailand, Indonesia, Malaysia, India, China, Sri Lanka, Liberia, Brazil. Leading exporter in the world: Thailand **(Fig. 8.16).**
Tea	Temp. 15° to 25°C; rainfall 100 to 150 cm; Well drained soil on the hilly slopes.	India, China, Sri Lanka, Japan, Kenya, Indonesia, Bangladesh, Turkey. Leading exporter: India **(Fig. 8.17).**
Coffee	Temp. 20°C to 25°C; rainfall 100 to 150 cm; Well drained alluvial soil.	Brazil, Columbia, Indonesia, Vietnam, Ivory Coast, Mexico, Ghana, Cameroon. India, Leading exporter in the world: Brazil **(Fig. 8.18).**
Cocao	Temp. 20°C to 27°C; rainfall 150 to 200 cm; Well -drained alluvial soil.	Ivory-Coast, Ghana, Indonesia, Brazil, Cameroon, Nigeria, Ecuador, Costa-Rica. Leading exporter in the world: Ivory-coast **(Fig. 8.19).**
Tobacco	Temp. 18° to 25°C; rainfall 75 to 100 cm; Well drained alluvial soil.	China, U.S.A., India, Brazil, Turkey, Japan, Bulgaria, South Korea. Leading exporter in the world: USA **(Fig. 8.20).**
Groundnut	Temp. 20° C to 25°C; rainfall 50 to 75 cm; Well drained loam to sandy loam.	India, China, U.S.A., Sudan, Senegal, Indonesia, Argentina, Myanmar. Leading exporter in the world: USA **(Fig. 8.21).**
Apple	Temp. 15°C to 20°C; rainfall 50 to 100 cm; Well drained alluvial soil.	USA, France, Italy, Spain, Mexico, India, Argentina, Turkey, Russia, Greece. Leading exporter in the world: USA **(Fig. 8.22).**
Banana	Temp. 18°c to 25°C; rainfall 100 cm; Well drained alluvial soil.	Brazil, Costa Rica, India, Mexico, Honduras, Leading exporter in the world: Costa Rica **(Fig. 8.22).**
Grapes	Temp. 15° to 20°C; rainfall 60 cm; Well drained alluvial soil.	Spain, France, Russia, Italy, USA, Chile, Argentina, Algeria, Greece. Leading exporter in the world: France **(Figs. 8.23 & 8.24).**

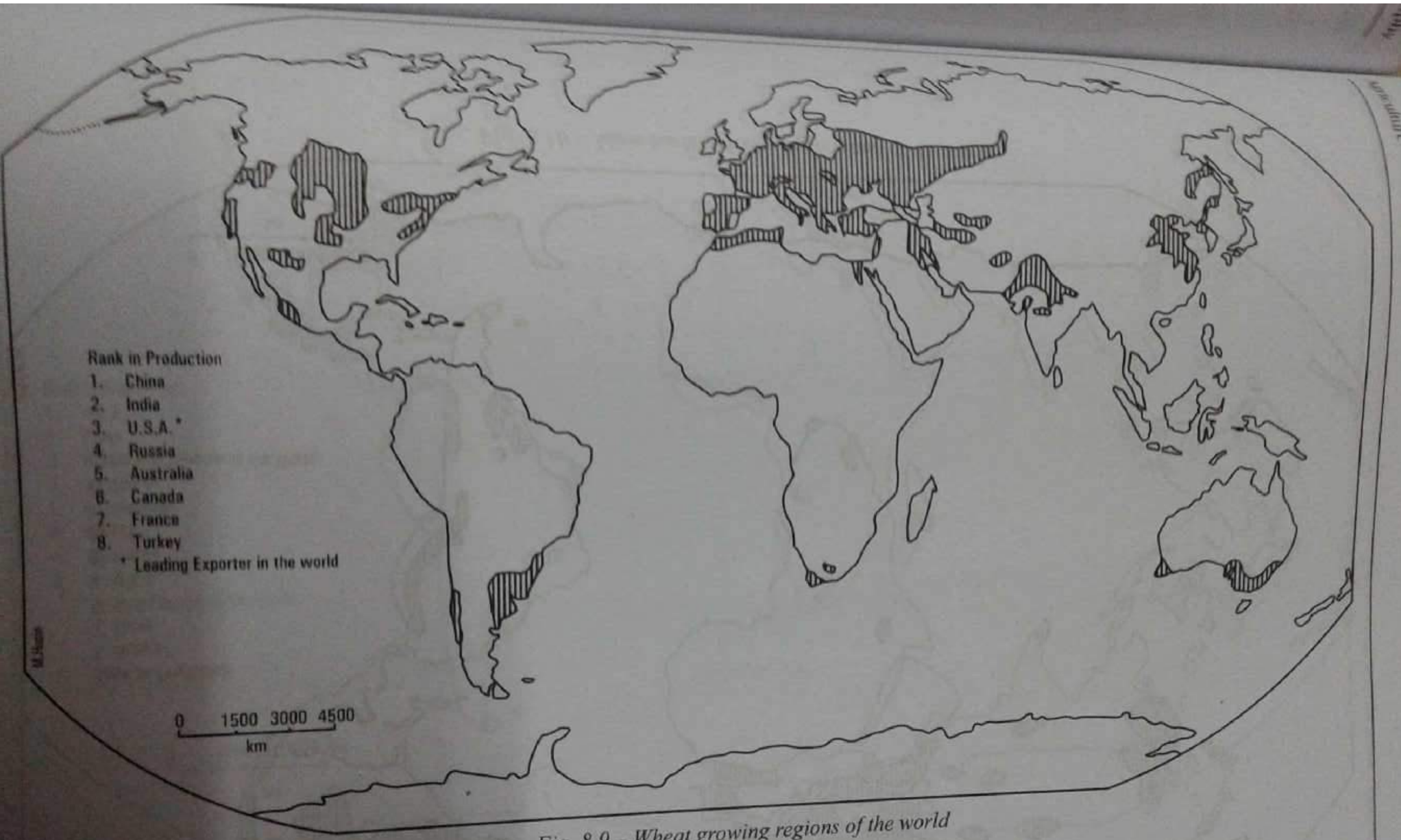


Fig. 8.9 – Wheat growing regions of the world

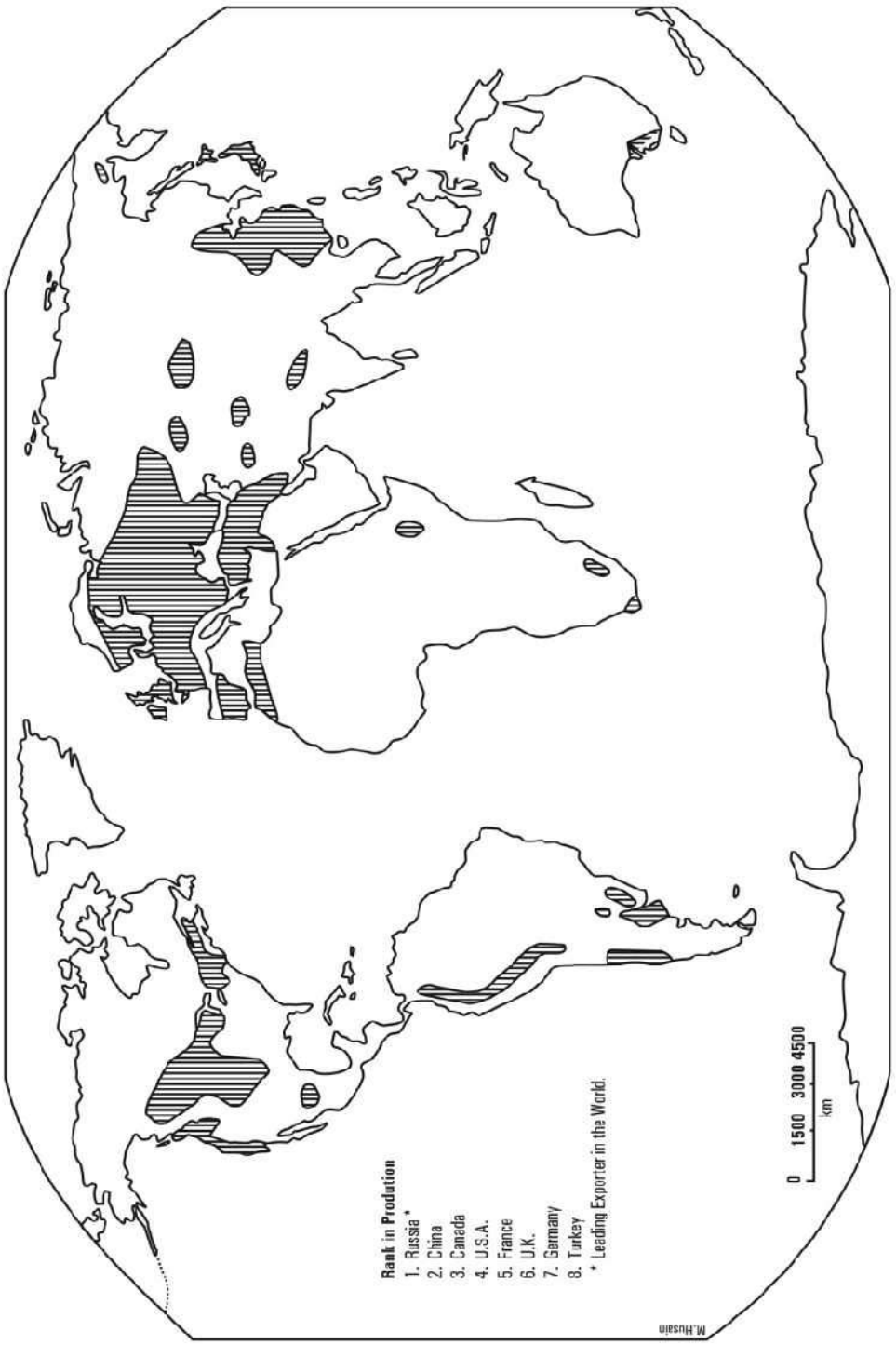


Fig. 8.10 – Main barley producing regions of the world

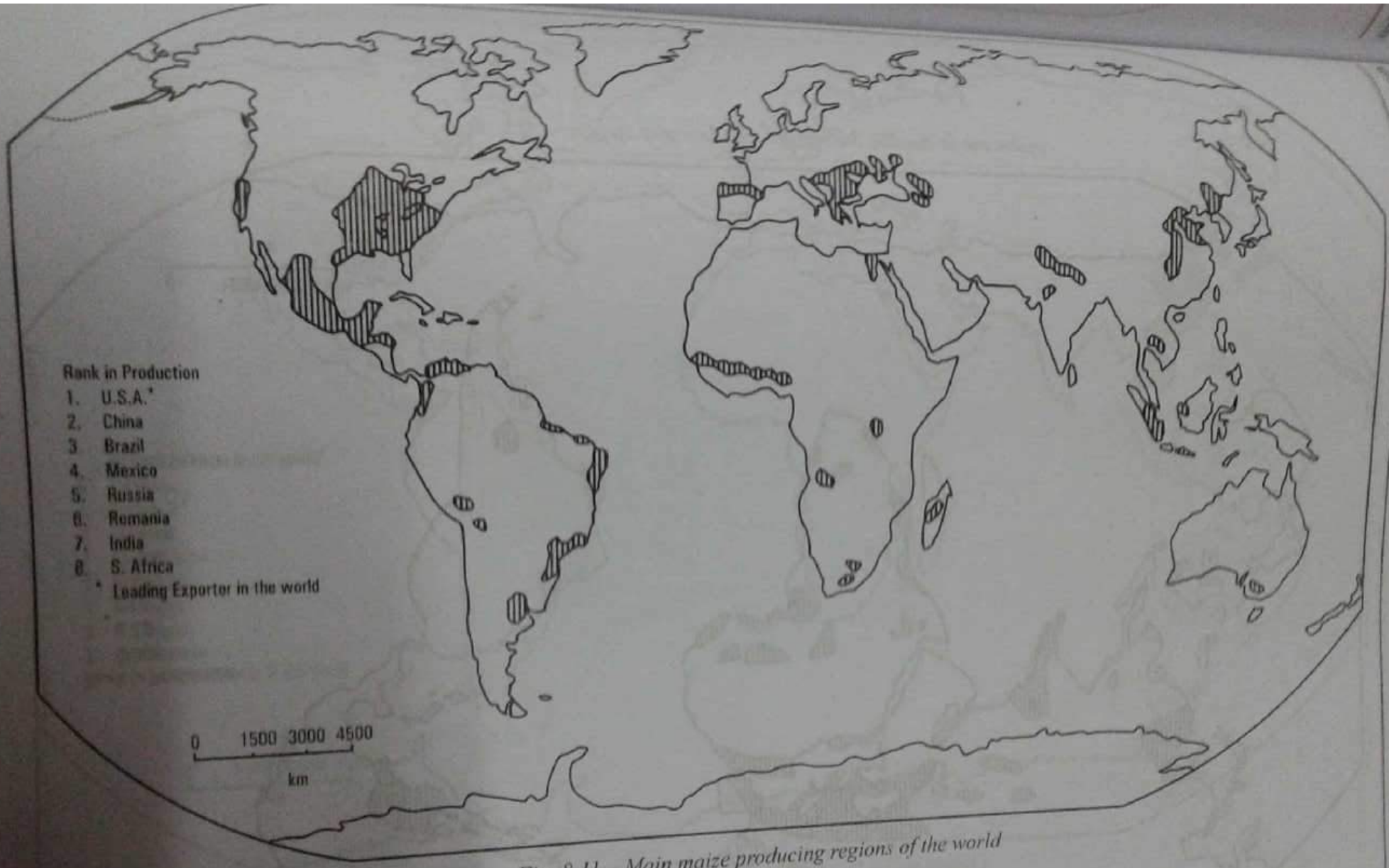


Fig. 8.11 – Main maize producing regions of the world

Fig. 8.12 – Millets and sorgham producing regions of the world

Fig. 8.13 – Soybean producing regions of the world

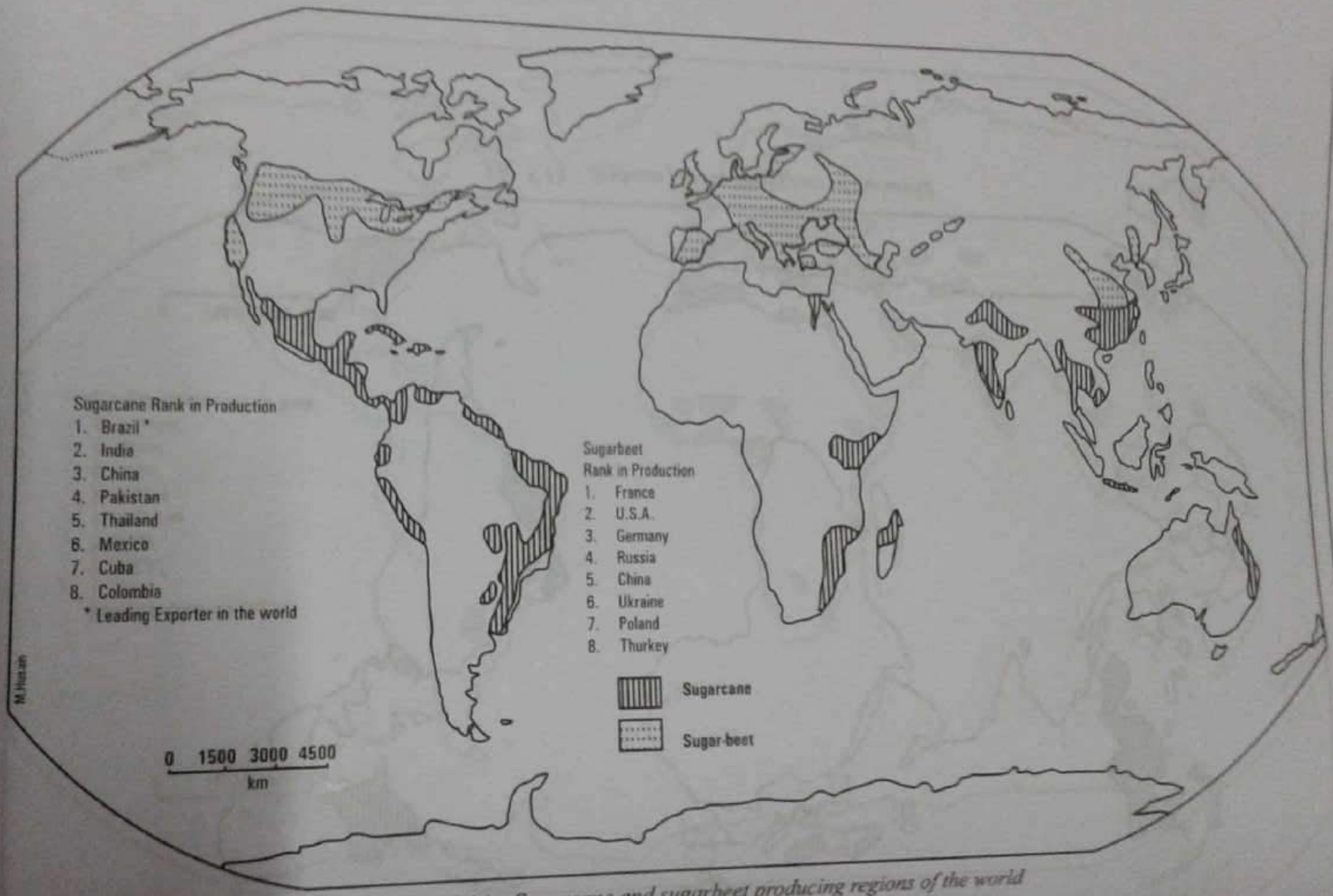


Fig. 8.14 – Sugarcane and sugarbeet producing regions of the world

Fig. 8.15 – Cotton producing regions of the world

Fig. 8.16 – Natural rubber producing regions of the world

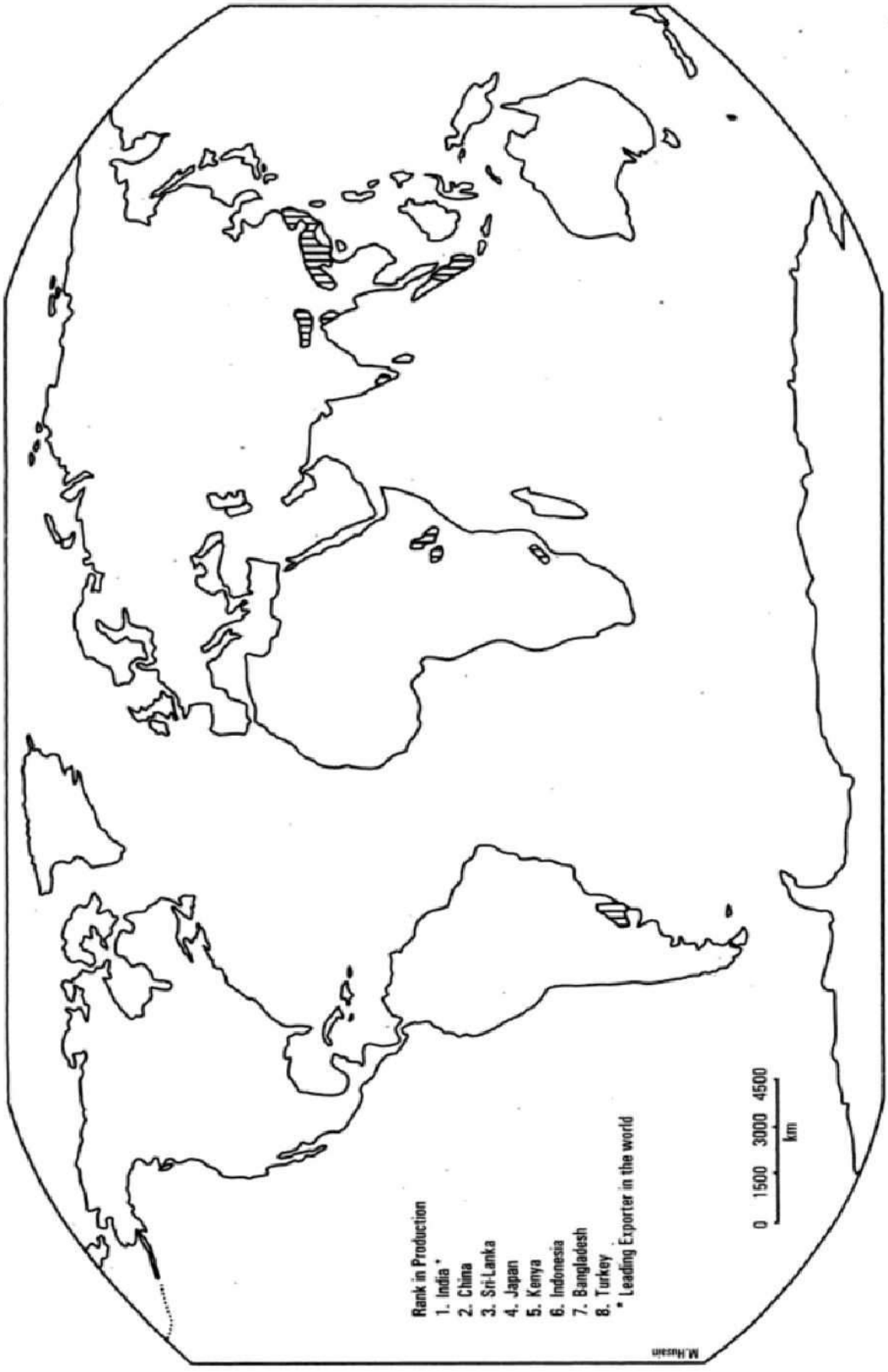


Fig. 8.17 – Tea producing regions of the world

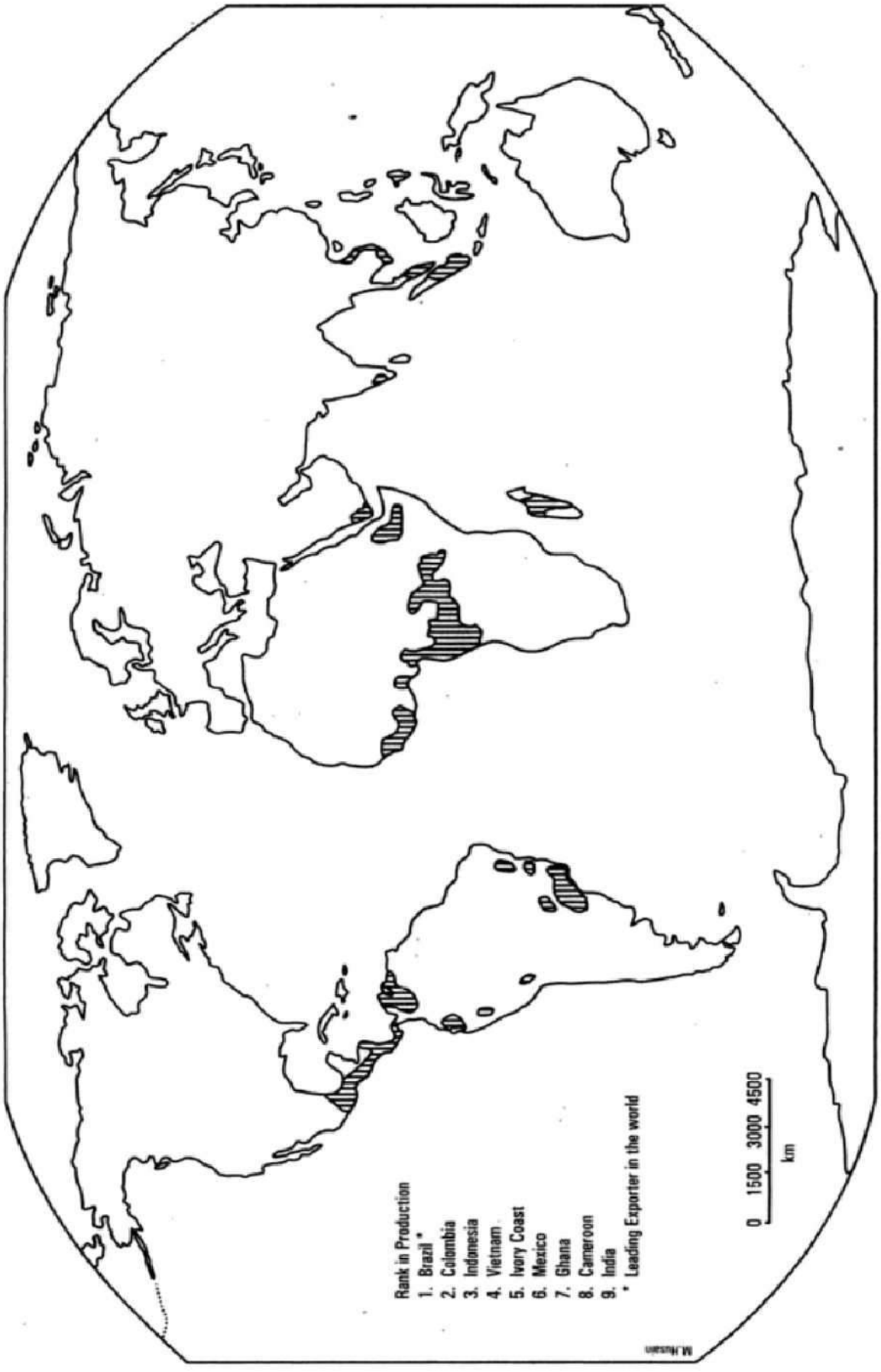


Fig. 8.18 – Coffe producing regions of the world

Fig. 8.19 – Cocao producing regions of the world

Fig. 8.20 – Tabacco producing regions in the world

Fig. 8.21 – Groundnut producing regions in the world

Fig. 8.22 – Apple and banana producing regions in the world

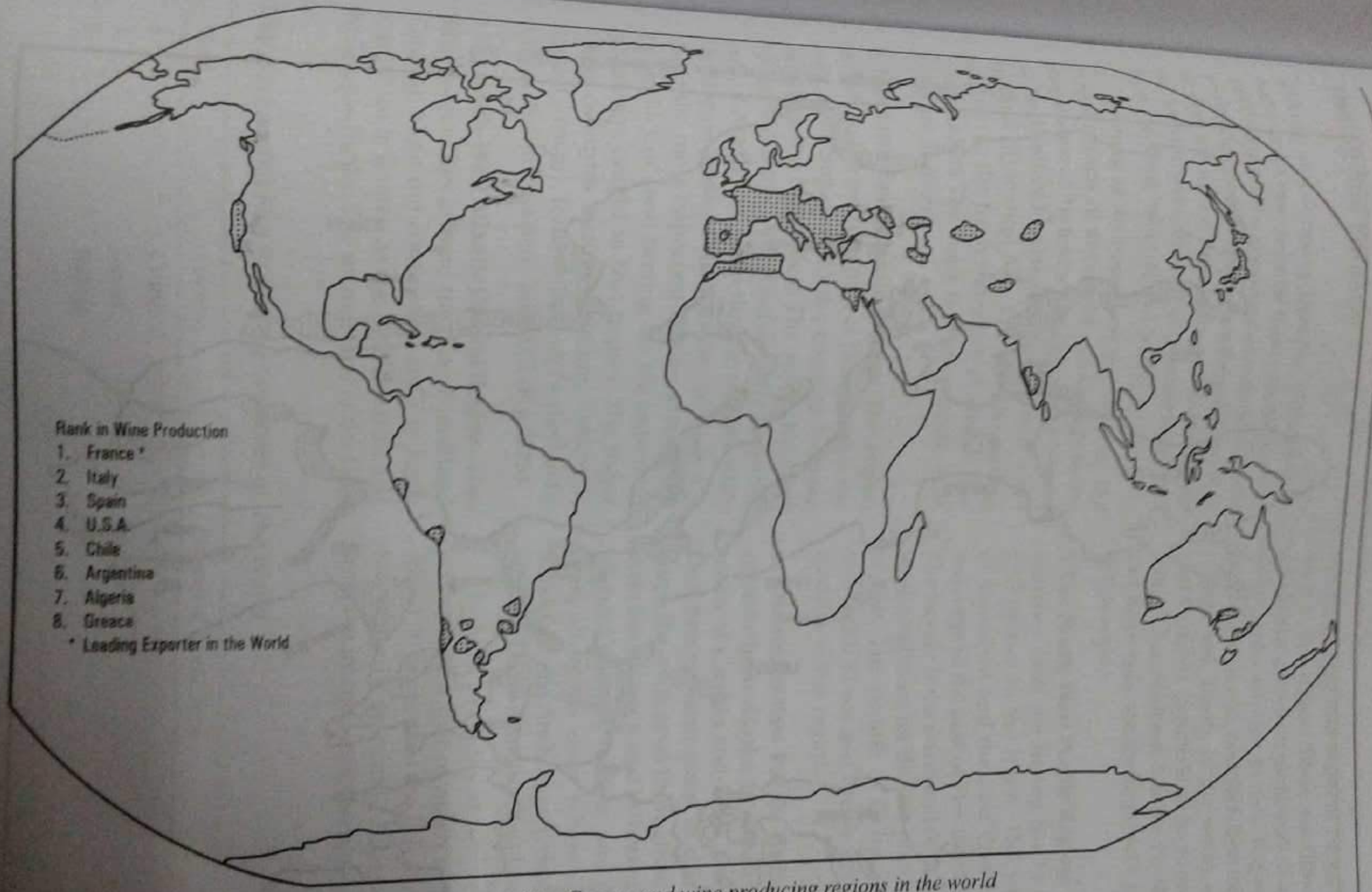


Fig. 8.23 – Grapes and wine producing regions in the world

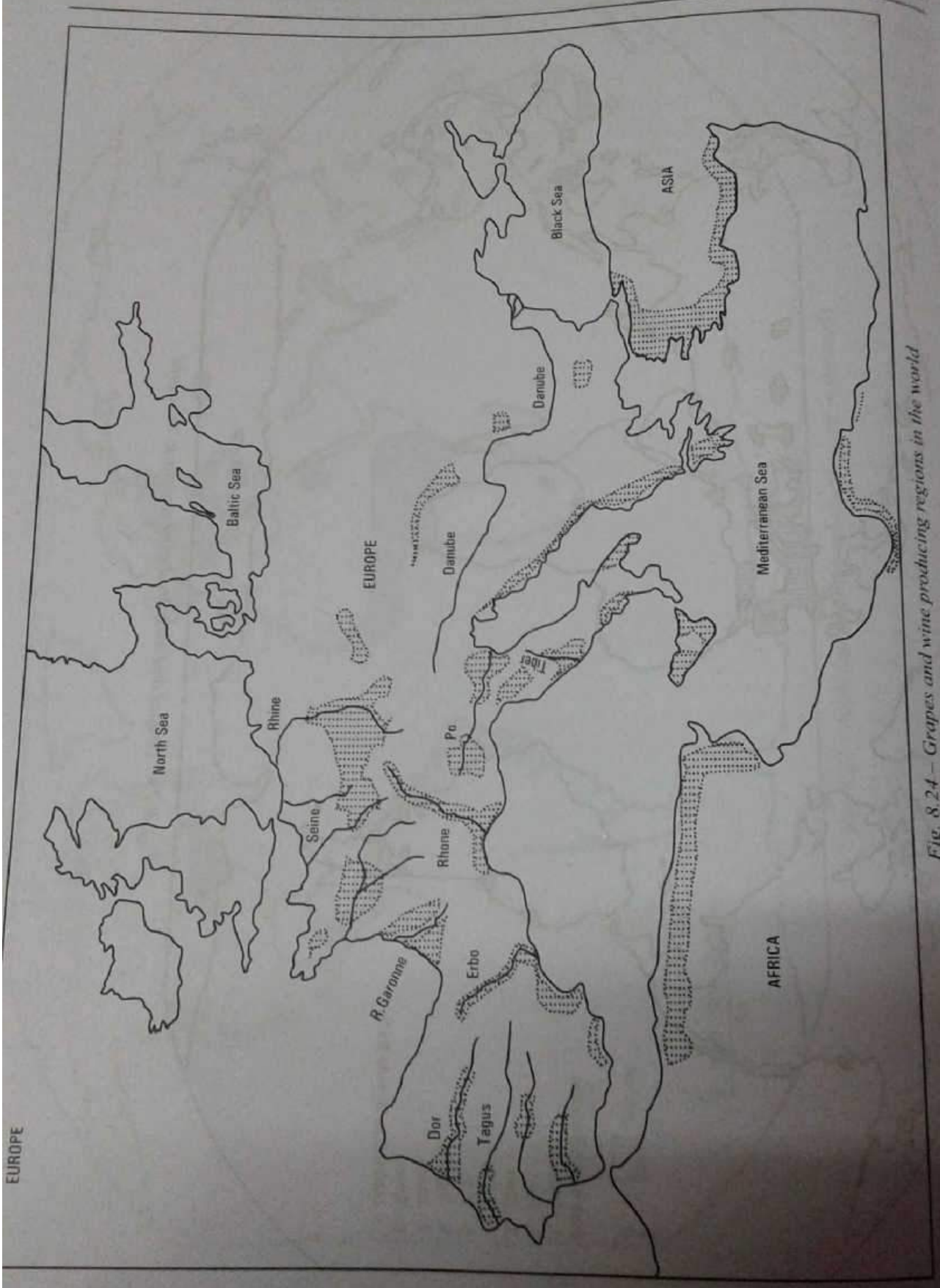


Fig. 8.24 – Grapes and wine producing regions in the world

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Table 8.2:

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Fishing and Forestry

Fishing and forestry involve gathering or harvesting a raw material from nature. Forestry and fishing are the important economic activities providing employment for a substantial number of persons in the developing and developed world. Moreover, they are important sources of food, building material and trade.

Fishing is an important economy in the coastal regions of the world particularly in the coastal areas of the temperate latitudes. Fisheries can be classified into two groups: (i) fresh water fish, and (ii) marine fish. China is the leading producer in the fresh water fish as well as that of marine fish. The major fishing grounds of the world are as under:

1. The North East Atlantic Region: This region extends to the western part of Europe from the coast of Portugal up to the coast of Norway including the North Sea. The warm water of the North Atlantic Drift (Gulf-Stream) keeps the coast of North Sea open throughout the year. The Dogger Bank located in the North Sea is one of the most important fishing grounds in the world. Cod, and herring are the important fish species caught in this region. The major fishing countries include Belgium, Denmark, France, Germany, Iceland, Ireland, Netherlands, Norway, Spain, Sweden, and UK **(Fig. 8.25)**.

2. The North-West Atlantic Coastal Region: This fishing region lies around the New-Foundland (Canada). Here the continental shelf is fairly wide which is known as the Grand Banks and the Georges Banks. The warm water of the Gulf Stream and the cold water of Labrador Current meet in this region. These conditions are ideal for the fast growth of planktons. Consequently, these banks are rich in fish. The main fish of the region are cod, haddock, herring, lobsters, oysters and perch. In the warm water of the southern part, shrimp is an important catch. St. John's, Charlottetown, Halifax, Portland, Boston, and New York are the important fishing ports of this region.

3. The North-West Pacific Region: This region stretches from the Bering Sea in the north to Philippines in the south. The warm current of Kurosiwo and the cold Oyasiwo currents converge to the east of Honshu Island (Japan). The merger of the warm and cold currents create ideal conditions for the fast population growth of fish. The people of China, Japan, North and South Korea and Russia are the main fish catchers in this region.

4. The North-East Pacific Region: This zone extends from Alaska to California along the coasts of Canada and USA. The North Pacific Drift brings warm water in this region which keeps the coast open throughout the year. The main fish species found in this region are halibut, pilchard, salmon, sardine, and tuna. The main ports along the coast where fish industry is important are Anchorage (Alaska), Vancouver (Canada), San-Francisco and Los Angles (USA).

Fishery provides an important source of protein in the diet of much of the population. About 90 per cent of the fish is caught from the sea, while the remaining 10 per cent is obtained from the inland water-bodies.

Table 8.2: Leading Fish Producing Countries of the World

Rank	*Country*	*Per cent of World Total*
1.	China	14
2.	Japan	12
3.	Russia	10

4.	USA	05
5.	Norway	04
6.	Chile	04
7.	India	03
8.	South Korea	03
9.	Thailand	03
10.	Indonesia	02

Aquaculture

The commercial raising of plants and animals in water is known as aquaculture. Today aquaculture accounts for less than one per cent of world fish production. The coastal areas of China and Japan are well known for aquaculture. Fish are also raised as sideline in rice paddies in the countries of Monsoon Asia. In recent years Japanese farmers have permanently converted some rice paddies into huge dug-out tanks for fish production. In the United States, commercial production of catfish has become big business in many southern states. The future of fish in the human diet remains bright. The developing countries will begin to produce more fish for their domestic markets rather than for export.

Law of the Sea

According to the United Nations Law of the Sea Conference 1982, the territorial sea limit is 12 miles from the shore, a 24-mile contiguous zone, and a 200 mile exclusive economic zone (EEZ) as called for in the Law of the Sea Treaty. Pollution of coastal marine waters remain a threat to world fisheries. Heavy metals such as cadmium, lead, and mercury reach coastal water via river discharges in industrial areas. Moreover, oil spills are adversely affecting the aquaculture adversely.

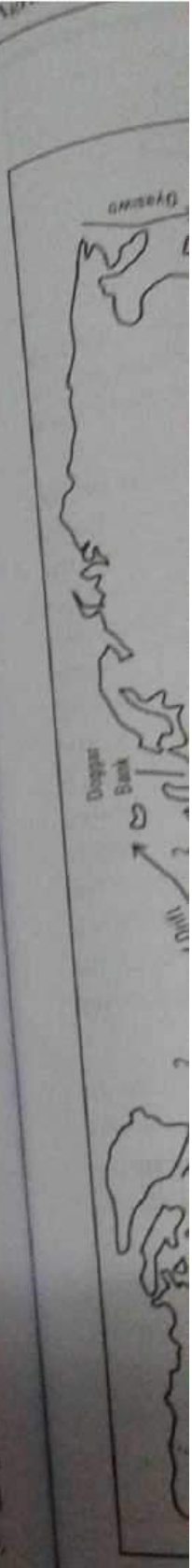
Forestry

Forestry is an important economic activity in the contemporary world. Wood is used as fuel, including cooking and heating uses, and half for industrial purposes (boards, pulp, veneer). The distributional pattern of forests have been shown in **Fig. 8.26.**

Commercial forests occur in two huge global belts as shown in **Fig. 8.26.** The first virtually encircles the world in the higher latitudes of the northern hemisphere. The second forest belt lies in the equatorial region including a large part of South America and central Africa. The main species of tropical region which are in much demand are mahogany, cedar, teak, ebony, and balsa. Moreover, commercial forest gathering is of significance in Japan, southern United States, Madagascar, Chile, Myanmar, Thailand, south-eastern Australia, New Zealand, some of the east European countries. The Amazon Basin is one of the largest equatorial forest areas of the world. The forest of Amazon Basin are known as *'Selvas'* **(Fig. 8.27).**

The tallest trees of the world grow in the fir and pine forests of northern California, where giant *redwood sequoias* attain heights of about 100 m and diameters of 6 meter. *Douglas fir* trees in California grow about 100 m. The forest resource of mid-latitudes hardwood deciduous tree include oak, chestnut, hickory, maple, birch, and beech trees.

The leading producers of industrial timber include United States, Russia, and Canada while India is the leading producer of fuelwood followed by Brazil and China **(Table 8.3), (Table 8.4).**



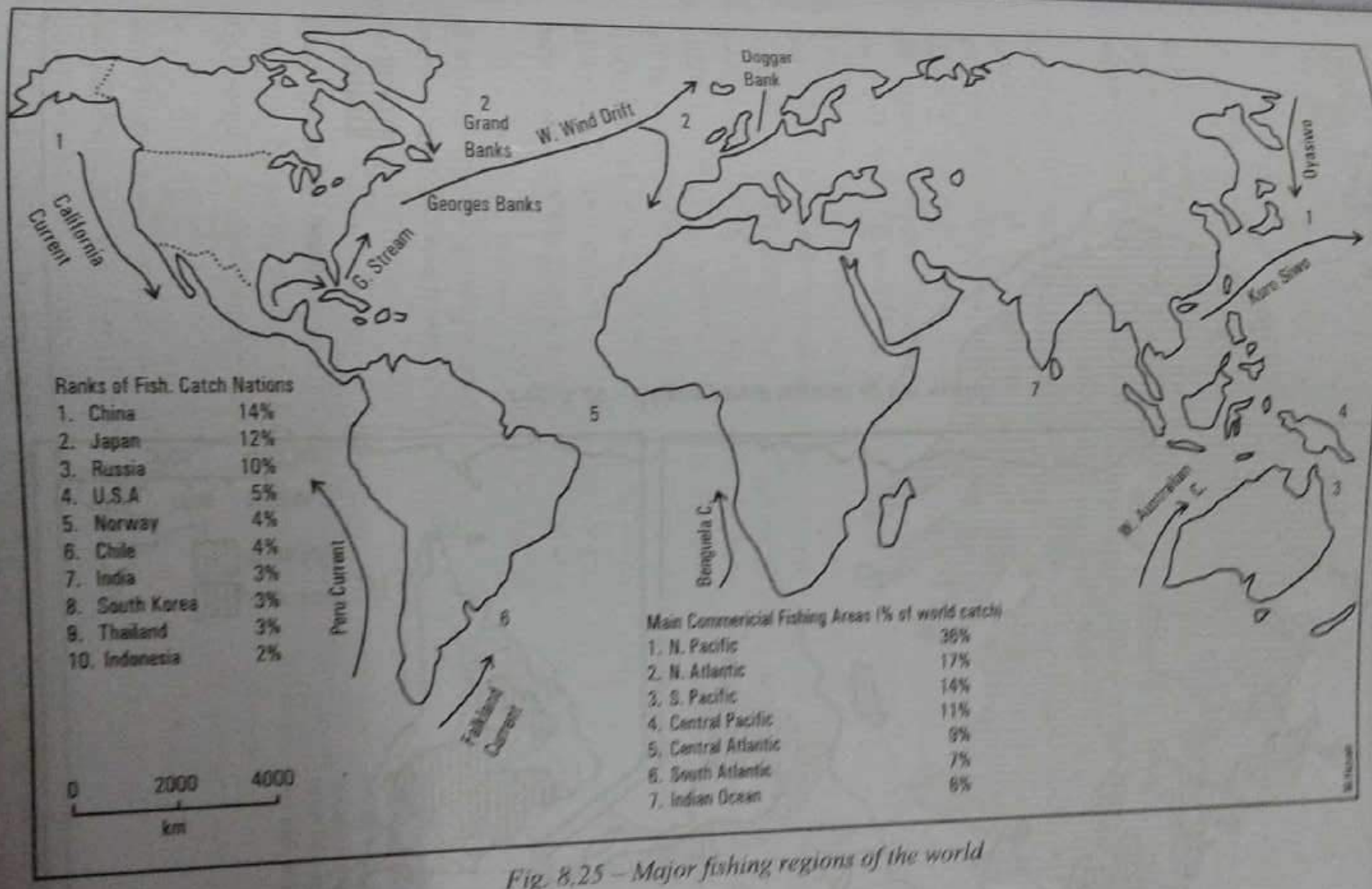


Fig. 8.25 – Major fishing regions of the world

Fig. 8.26 – Major forest regions of the world

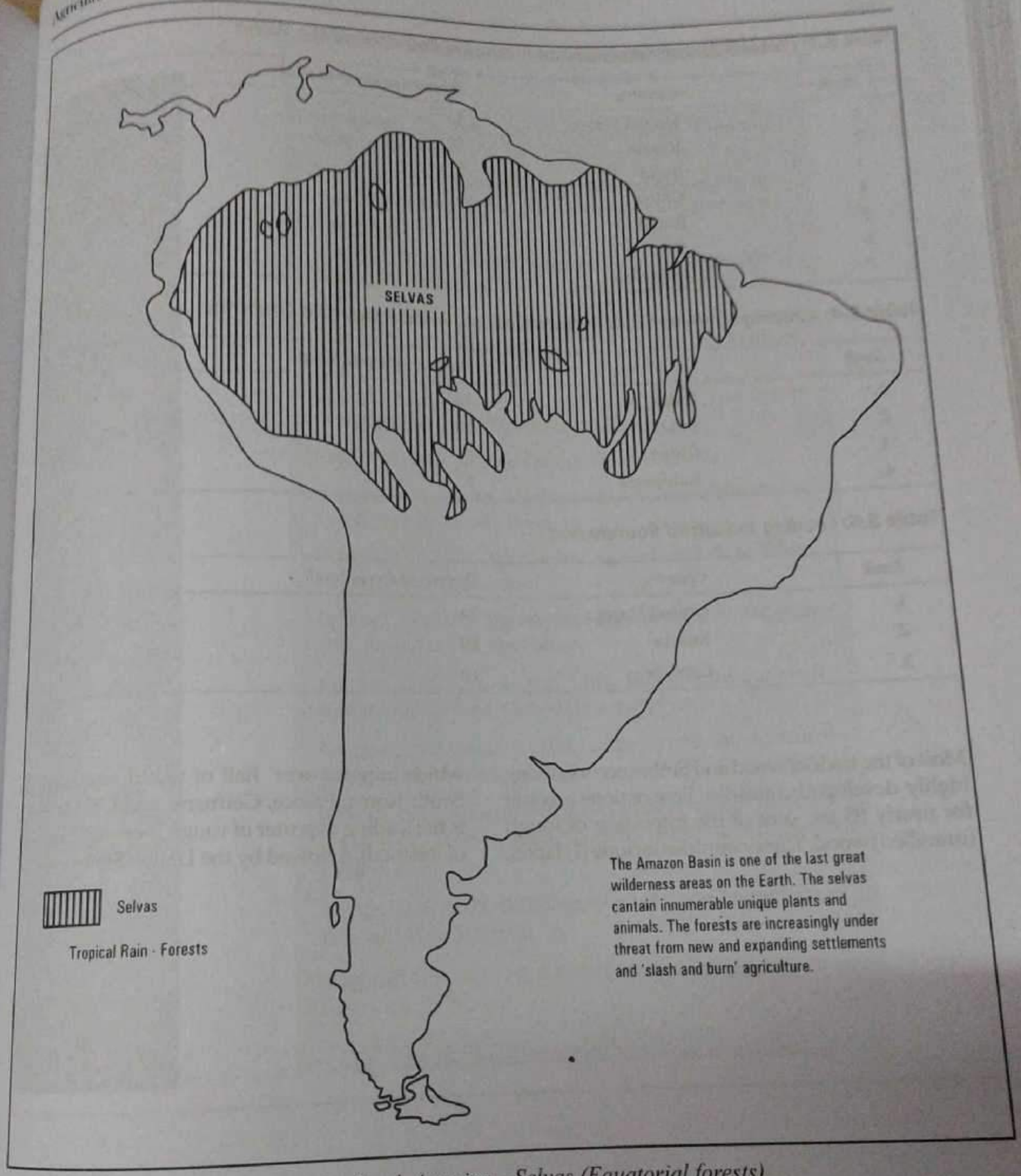


Fig. 8.27 – South America – Selvas (Equatorial forests)

Table 8.3: (Table 8.3), Leading Logwood Producing Countries of the World

Rank	*Country*	*Percentage of world total*
1	United States	14
2	Russia	12
3	India	8
4	China	8
5	Brazil	7
6	Canada	5
7	Indonesia	4

Table 8.4: Leading Fuelwood and Industrial Roundwood Producing Countries

Rank	*Countries*	*Percent of World Total*
1.	India	13
2.	Brazil	10
3.	China	9
4.	Indonesia	7

Table 8.5: Leading Industrial Roundwood

Rank	*Country*	*Percent of world total*
1.	United States	24
2.	Russia	19
3.	Canada	10

Most of the trade of wood and timber occurs among highly developed countries. Five nations account for nearly 85 per cent of the importing of rough (unmilled) wood. These countries include (1) Japan, which imports over half of world total, and (2) South Korea, France, Germany and UK.Malaysia is the leading exporter of rough wood (35 per cent of the total), followed by the United States.

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