Study questions from: “Economic Botany” 3rd Ed. Simpson & Ogorzaly

Chapter 1

1. About how many of the edible species of plants known have been eaten historically by humans? Of this total, about how many have been eaten with some regularity? And of this total, about how many are now of major economic importance?
2. What is the major difference between the primary and secondary compounds that plants produce?
3. What is an angiosperm? What is a gymnosperm? (Note that the text has a glossary on P. 486)
4. What are the 2 main functions of the roots of plants?
5. What is a root that emerges from a stem called?
6. What are the 3 different kinds of underground stems, which are used for food storage?
7. What is a bulb?
9. Be prepared to give the names and sequences in development, represented by the drawings you received in class.
10. What 3 features possessed by seeds make them good sources of food for humans?
11. What is the name of the system of breeding that most plants in nature use, even if they are self-compatible? What does this system ensure?
12. What is the meaning of the following terms: Clone, Grafting, Autopolyploid, and Allopolyploid.
13. Why do triploid organisms have trouble with seed production?
14. What is a major advantage to a farmer in growing a crop plant far from its native home? What is a possible hazard in doing this?
15. The technology of gene transfer using plasmids is successful but has a major limitation, which is.
16. Zoologists have a rather clear definition of what a species is, but for botanists, one aspect of this definition is troublesome. What is that aspect and what are the 2 reasons for the troublesomeness?
17. How is “cultivar” defined?

Chapter 2

1. What is the main difference between domestication and cultivation?
2. What 2 features do pollen grains have that make them particularly useful for identifying plant remains? What is a phytolith?
3. From what date is the earliest evidence of agriculture?
4. Geographically, where is the “Cradle of Agriculture?” What are other “Cradles?”
5. Despite the variations in the reasons for the answers to “Why Farm?” there are 3 prerequisites common to all situations in which agriculture was independently initiated. What are they?
6. What were Vavilov’s 2 assumptions in determining the locations of his “Centers of Origin?”
7. Name a crop from each of the 8 of Vavilov’s Centers of Origin.

Chapter 3

1. What is a fruit? What is agamospermy? What is parthenocarpy? What is a carpel? What is a simple fruit? What is a compound fruit? What is a pericarp?
2. What is the most important temperate fruit tree crop in the world?
3. Which of the temperate fruits has the highest Vitamin A content? Which of the temperate fruits has the highest Vitamin C content? Which of the temperate nuts has the highest carbohydrate and lowest calorie content?
4. In addition to apples, what 2 other temperate fruits are in the same subfamily?
5. How does it happen that the Latin name for the genus in which apples are classified means “bad?”
6. What is the genetic origin of nectarines?
7. Of what is the USDA label for various meats made?
8. Where is the kiwi native?
9. What are the genus and species names of the most widely cultivated species of grape? Where is it native?
10. What are the genus and species names of the most important native New World grape?
11. Why can’t olives be eaten straight from the tree? What is the major use of olives?
12. What is the only commercially important temperate nut to come from North America?
13. What is allelopathy and with which nut tree is it associated?
14. Why can’t you buy American chestnuts in the grocery store?
15. What is the difference between filberts and hazelnuts?
16. Most of the temperate nut trees are monoecious, but which one is dioecious?
17. In which state is the largest almond crop harvested?

Chapter 4

1. Give a reason as to why temperate fruits dominate our markets and constitute an appreciable part of the commercially available fruits in tropical regions also.
2. What is a hesperidium?
3. What is the largest perennial fruit tree crop in the U.S.?
4. What is the most widely grown citrus fruit in the world?
5. What is the name of the medical condition which citrus juices help alleviate?
6. What are the 3 main types of hybrid sweet oranges? What is the most important variety now grown in Florida? In California? What is the “navel” of the navel orange?
7. What chemical could one use to make a green orange turn orange?
8. Which of the citrus fruits is the most used for secondary purposes?
9. Why are English sailors known as “limeys”?
10. When, approximately, did commercial production of grapefruit begin in the U.S?
11. Squashes and melons are native to which general parts of the world? Which group, to which part?
12. How is the presence of the bottle gourd in Peru, 7,000 years ago and in Egypt, 3,000 years ago, explained?
13. Which species of Cucurbita is now the most widely cultivated and versatile species of squash? What is a pepo?
14. Mature luffa gourds are converted into scrubbing sponges by retting. What does this mean?
15. Why were tomatoes initially thought to be poisonous? Where are they native?
16. What 2 other fruits of some importance are in the same family as the tomato?
17. With regard to tomatoes, what has the Calgene Co in Davis, CA accomplished?
18. Why is the coconut considered the “greatest provider” in the tropics?
19. Historically, how were coconuts probably dispersed?
20. From what kind of plant does the date come from?
21. Most modern cultivars have pineapple fruits that are formed without........inside.
22. With what fruit is the United Fruit Co. associated and why?
23. Where is the edible fig native?
24. What general kind of chemical constituent is responsible for the avocado to have the highest energy-containing fruit pulp known?
25. How did the avocado growers convince us to eat avocados?
26. Which 2 states of the U.S. are the largest growers of avocados?
27. Mangos belong to a family of plants that also has in it a very nasty one, named....
28. What is “gumbo”?
29. What do pomegranates symbolize in some parts of the world?
30. An extract from papayas is used for what purpose?
31. With what tropical fruit tree is the “mutiny of HMS Bounty” associated and why?
32. Two problems initially hindered macadamia production: 1...2...
33. Where are macadamias native?
34. What noxious plant are cashews related to?
35. Almost all of the world’s supply of this tropical nut is collected from wild trees, named.....
Chapter 5

1. What grains sustained: A. Near Eastern Civilization; B. Far Eastern; C. Pre-Columbian New World? Which 2 cereals have unisexual flowers? Which of the cereals has both the highest fat and protein content? Who could you say founded the eating of breakfast food cereal in the U.S. and whose company still controls about 40% of the market?

2. Technically, what is a grain? What is a cereal?

3. The decline of the Roman Empire can be attributed at least in part, to .......

4. What is a tiller? What is bran? What is the aleurone layer and what is its “key role” in seed germination? Where do grasses store energy for germination?

5. What are 2 major ways humans have modified the growth habit of cereals?

6. What is lodging? What is its relationship to stalk strength and stature?

7. What is probably the first cereal that was domesticated? What 2 major uses in the U.S. does it have today?

8. Why not leave the embryo (instead of removing it) to be ground with the endosperm to make, say, wheat or rice flour?

9. What is the genus name for wheat? What is gluten? What is its importance?

10. Why did making raised (using yeast) bread have to wait until free-threshing wheats appeared? What is the best way to combat the major group of wheat pests?

11. In the beginning, this cereal .......was a weed in wheat and barley fields. How does its gluten content compare with wheat’s?

12. What are some of the present day uses of rye?

13. What is triticale? How is it better than its parents are?

14. Of all the major Eurasian grains, which one was probably the last to be domesticated? And probably where? What is its relationship to horses? What 2 items related to horses promoted their use as a primary draft animal?

15. Why is rice said to be the world’s most important crop? Which states of the U.S. currently lead in rice production? What are the 2 major types of rice, and when they are cooked, what are they like in texture?

16. In general, what is it that allows rice roots to grow in anaerobic conditions?

17. What is the difference in growing conditions between wet and upland rice? What is the relationship between rice and Vitamin B1?

18. In what part of the world is “wild rice” native? Before plant breeders got to work, what was the problem in harvesting it?

19. Sorghum is a native of what continent? What part of the sorghum plant can be used to make molasses? What part of one type of sorghum plant can be used to make whiskbrooms?

20. Skip section on millets.

21. Which cereal is said to be most efficient in converting carbon dioxide and water into foodstuffs? What is the region of its origin? What are the 6 main types? What is teosinte?

22. Which 2 amino acids is corn deficient in? Why can’t corn bread be made with yeast in the same way wheat bread is made?

23. What is pellagra? What is a corn tassel? What is a corncob? What is “corn silk?”

24. What is the major use of corn? What are some of the other uses of corn?

25. With what other kind of plant are forage grasses grown in order to maximize the food value of forage land?

END.