
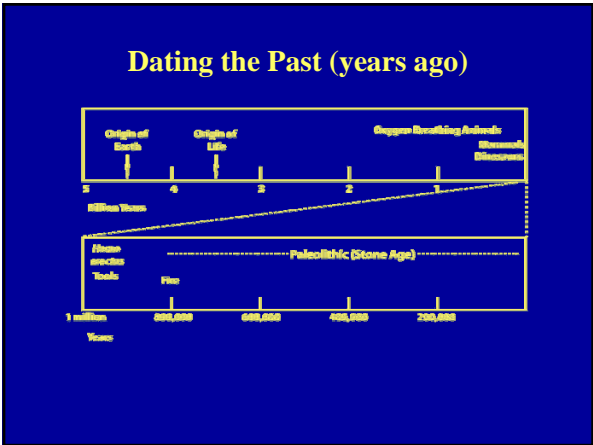
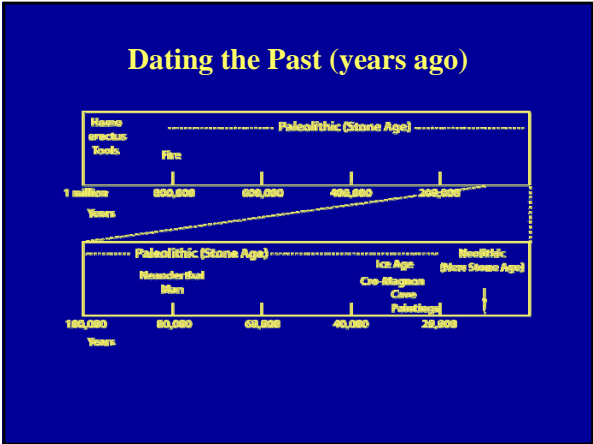


Lecture 1

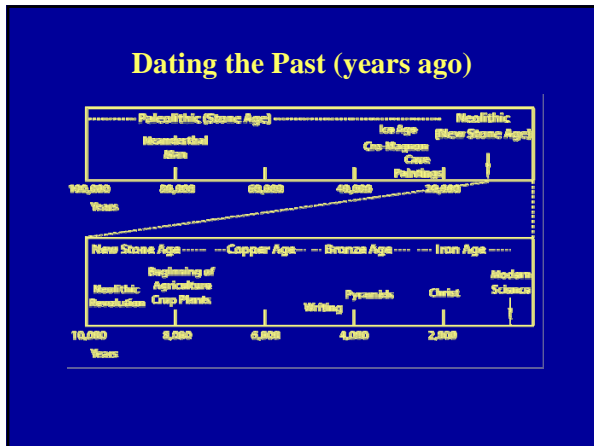
Dating the Past: Geologic, Archeologic, Biologic, and Human Culture







History of Horticulture: Lecture 1



The Emergence of Man

Geology	Archeology	Billions of Years Ago
Precambrian earliest era		4.5 4 3 2 1
		Creation of the Earth Formation of the primordial sea First life, single-celled algae and bacteria, appears in water
		Millions of Years Ago
		800 600 400
		First oxygen-breathing animals appear Primitive organisms develop interdependent specialized cells Shell-bearing multicelled invertebrate animals appear Evolution of armored fish, first animals possess backbones Small amphibians venture onto land Reptiles and insects arise Age of dinosaurs begins
Paleozoic ancient life		200 80
		Birds appear Mammals live in shadow of dinosaurs Age of dinosaurs ends Prosimians, earliest primates, develop in trees
Mesozoic middle life		60 40 20 10 8 6 4
		Monkeys and apes evolve
		Ramapithecus, oldest known primate with apparently human-like traits, evolves in India & Africa
		Australopithecus, closest primate ancestor to humans, appears in Africa
Cenozoic recent life		

Geology	Archeology	Millions of Years Ago
Lower Pleistocene oldest period of most recent epoch	Lower Paleolithic oldest period of Old Stone Age	2 1
		Oldest known tool fashioned by humans in Africa First true human, <i>Homo erectus</i> , emerges in East Indies and Africa <i>Homo erectus</i> populates temperate zones
		Thousands of Years Ago
Middle Pleistocene middle period of most recent epoch	Middle Paleolithic middle period of Old Stone Age	800 600 400
		Humans learn to control and use fire Large-scale, organized elephant hunts staged in Europe Artificial shelters
		Neanderthals emerge in Europe
Upper Pleistocene latest period of most recent epoch	Upper Paleolithic latest period of Old Stone Age	200 80 60 40
		Ritual burials in Europe and Near East suggest belief in afterlife Woolly mammoths hunted by Neanderthals in northern Europe
		Cro-Magnons arise in Europe Asian hunters cross Bering Land Bridge to populate New World Oldest known written record, lunar notations on bone, made in Europe Humans reach Australia First artists decorate walls and ceilings of caves in France and Spain Figurines sculpted for nature worship Invention of needle makes sewing possible Bison hunting begins on Great Plains of North America
Holocene present epoch	Mesolithic Middle Stone Age	30 20 10
		Bow and arrow invented in Europe Pottery first made in Japan

History of Horticulture: Lecture 1

Geology	Archeology	Years Ago		
Holocene (cont.)	Neolithic New Stone Age	11000	Sheep domesticated in Near East Dog domesticated in North America	
		10000	Jericho, oldest known city, settled Goat domesticated in Persia Humans cultivate first crops, wheat and barley in Near East	
		9000	Pattern of village life grows in Near East Catal Huyuk, in what is now Turkey, becomes largest Neolithic city Loom invented in Near East Cattle domesticated in Near East	
		8000	Agriculture begins to replace hunting in Europe Copper used in trade in Mediterranean area Corn cultivated in Mexico	
		Copper Age	6000	Oldest known massive stone monument built in Brittany Sail-propelled boats used in Egypt First city-states develop in Sumer
			5500	Cylinder seals begin to be used as marks of identification in Near East First potatoes grown in South America Wheel originates in Sumer Humans begin to cultivate rice in Far East Silk moth domesticated in China
	Bronze Age	5000	Egyptian merchant trading ships start to ply the Mediterranean First writing, pictographic, composed in Near East Bronze first used to make tools in Near East City life spreads to Nile Valley Plow is developed in Near East	
			4800	Accurate calendar based on stellar observation devised in Egypt Stonehenge, most famous of ancient stone monuments, begun in England
		4600	Pyramids built in Egypt Minoan navigators begin to venture into seas beyond the Mediterranean Variety of gods and heroes glorified in Gilgamesh and other epics in Near East	

Geology	Archeology	Years Ago		
Holocene (cont.)	Bronze Age (cont.)	4500	Cities rise in the Indus Valley Earliest written code of laws drawn up in Sumer Herdsman of Central Asia learn to tame and ride horses	
		4000	Use of bronze in Europe Chicken and elephant domesticated in Indus Valley Eskimo culture begins in Bering Strait area	
		3500	Invention of ocean-going canoes; humans reach South Pacific Ceremonial bronze sculptures created in China Imperial government, ruling distant provinces, established by Hittites	
		3400	Iron in use in Near East First complete alphabet devised in script of the Ugarit people in Syria Hebrews introduce concept of monotheism	
		Iron Age	3000	Reindeer domesticated in Eurasia
			2900	Phoenicians develop modern alphabet
	2800	Celtic culture begins to spread use of iron throughout Europe Nomads create a far-flung society based on the horse in Russian steppes First highway system built in Assyria Homer composes <i>Iliad</i> and <i>Odyssey</i> Rome founded		
		2700		
		2200	Wheel barrow invented in China Epics of India's gods and heroes, <i>Mahabharata</i> and <i>Ramayana</i> , written	
		2000	Water wheel invented in Near East Current era begins	

Current Era

1 Height of Roman Empire, Birth of Christ, Destruction of Pompeii (79), Persecution of Christians, Emperor Constantine, Establishment of Christian dominance, Decline of Roman Empire

500 Rise of Islam, Dark Ages in Europe, Plague, Tang Dynasty in China, Sung Dynasty in China, Vikings

1000 Norman Conquest (1066), Cathedrals constructed, Genghis Khan, Ottoman empire in Turkey, Aztecs settle in Mexico, Printing Press

1500 BEGINNING OF MODERN ERA, Printed Herbals, Columbus, Age of Exploration

History of Horticulture: Lecture 1

1600 William Shakespeare, Francis Bacon, Rembrandt, Cromwell
1700 Gardens of Versailles, Isaac Newton, US Revolution (1776), Carolus Linnaeus
1800 Thomas Andrew Knight: Beginning of Horticultural Science, Charles Darwin, Gregor Mendel; Birth of Genetics, Morrill Act
1900 Liberty Hyde Bailey—Wright Brothers flight—ASHS founded, Rediscovery of Mendel's paper, Beginning of Genetics
1910 Thomas Hunt Morgan & Drosophila, Mechanization of Agriculture, World War I

1920 Hybrid Corn, Vitamins, Rise of Tractor in Agriculture
1930 World Depression, Dust Bowl
1940 World War II, VE, VJ Day, Cold War
1950 DNA Structure, Watson & Crick, Korean Conflict, Genetic Code
1960 Herbicides, Vietnam Era
1970 Man on the Moon (1969), Green Revolution, Plasticulture, Tissue Culture, Micropropagation
1980 Gene Transformation, Molecular Biology
1990 Gulf War, Computers, Information Revolution—Internet
2000 Genomics, Directed Mutation

Summary
Dates to Remember

Years ago	
4.5 Billion	Origin of Earth
3.5 Billion	Origin of Life
1 Billion	Oxygen-breathing Animals
200 Million	Age of Dinosaurs
2 Million	Tools Used by Early Man
1 Million	<i>Homo erectus</i>

History of Horticulture: Lecture 1

Years ago	Dates to Remember
200,000	Neandertal, Cro-Magnon
10,000	Neolithic Revolution
8,000	Agriculture Develops
5,000	Bronze Age–Pyramids–Stonehenge
	Writing begins
3,000	Iron Age
2,500	Golden Age of Greece
2,000	Common Era
1,500	Fall of Rome
1,000	Norman Conquest
500	Modern Times–Columbus
0	Genetic Code
