

**The Origins of Agriculture** It appears that the transition to agriculture was not an abrupt change; the road from gathering plants in the wild, then cultivating and finally domesticating them, was long and convoluted. Geneticists working on plant genomes have been crucial in unlocking the nuances of this transition, as they look for genetic evidence of physical changes in species as a product of domestication. Plant genomes show us that humans were harvesting and eating wild cereals for thousands of years before actual domestication began. The earliest sites and dates for actual species domestication are difficult to determine. But there is little doubt that the first successful attempt at domesticating a species was undertaken by Paleolithic foragers, and that was the domestication of the dog. The oldest actual remains of a domesticated dog have been dated to around 15,000 years ago. The domestication of other species by early farmers occurred gradually around the world over long time periods. This began in Southwest Asia around 11,500 years ago, then in northeast Africa perhaps a thousand years later, in East Asia at least 9,000 years ago, and eventually in New Guinea, sub-Saharan Africa, South Asia, and the Americas in the millennia that followed. The agricultural revolution can be explained as a step-by-step process in which conscious human decision making may have played only a limited role. Critical to the “evolutionary not revolutionary” model is climate change and the emergence of environmental conditions that facilitated the transition, coupled with demographic pressure as a result of increasing population densities in some regions. The last cycle of the most recent ice age began around 110,000 years ago, and global temperatures plunged to their coldest level between 21,000 and 17,000 years ago. Conditions were so cold that forest disappeared and frigid tundra covered much of the planet. Under these conditions, foraging was the only survival strategy possible for humans, and this remained the situation until the beginning of the Holocene epoch around 11,700 years ago, when the earth experienced a rapid global warming at the end of the last ice age. The Holocene was not only warmer and wetter, but also more climatically stable, and as different groups experimented with domestication, they increased in size relative to foraging bands. Researcher Peter Richerson argues that this increase in group size led to intergroup competition, and this more or less forced communities to adopt farming. Building on the work of Richerson and other specialists, big history offers a five-step model to try to explain the origins of agriculture.

1. Humans already had a lot of the necessary knowledge and skills for farming. For almost 200,000 years, humans had been endlessly manipulating other species and landscapes to enhance our food supply and reduce our exposure to predators. So, our foraging ancestors were already preadapted culturally to manipulate the natural environment.
2. Some animal and plant species were also essentially preadapted as potential domesticates. This means that some animals and plants had evolved in a way that made them more suitable for domestication than others. Potential animal domesticates have to meet some demanding criteria, including rapid growth, regular birth rates, a herd mentality, and a good disposition.
3. Humans in certain key regions of the globe were already adopting less nomadic lifestyles and becoming at least part-time sedentary. Sedentism began to increase in some parts of the world from about 11,000 years ago. The two main reasons for this were climate change and population pressure. As climates became warmer and wetter at the end of the last ice age, in some areas there appeared regions of natural abundance, where large numbers of humans settled, and increased sedentism eventually led to overpopulation.
4. Because of efficient foraging,

population pressures resulting from sedentism and continuing migration forced human communities into smaller and smaller territories. By 13,000 Before Present, foragers were occupying a wide range of environmental niches all over the planet, and in some cases these niches could not support increased populations. These groups were forced to try to feed themselves on rapidly diminishing parcels of land, and with further migration not really an option, they found themselves caught in the “trap of sedentism.”

5. Faced with increasing populations, many communities were left with few alternative survival strategies. Because of continuing climate change and the resulting lack of space, a return to a nomadic, foraging lifeway was impossible. The only viable option available for audent foragers faced with overpopulation pressure and climate change was to intensify cultivation and adopt farming. And that's exactly what appears to have happened at sites that could support large populations