NO PREP

Maya Agriculture

Feeding Cities in the Jungle

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Name: Period: Date:

Maya Agriculture: Feeding Cities in the Jungle

The Myth of the Unproductive Jungle

For most of the 20th century, scholars assumed that tropical jungle environments were too poor in nutrients to support large civilizations. The standard view held that Maya cities must have been small ceremonial centers rather than true cities, because the jungle soil could not produce enough food to sustain urban populations. This assumption was wrong — spectacularly and consequentially wrong. As archaeological survey methods improved, particularly with the introduction of aerial photography and LiDAR, researchers discovered that the ancient Maya had transformed the jungle landscape through an extraordinarily sophisticated system of agricultural management that could feed populations of hundreds of thousands. The key to understanding Maya agriculture is recognizing that the Maya did not simply farm the jungle — they engineered it. Over centuries, they built raised agricultural fields in swampy lowland areas, carved terraces into hillsides to prevent erosion and capture rainwater, managed orchards and forest gardens around their

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The Three Sisters and the Milpa

The foundation of Maya diet was maize (corn), which held a place in Maya culture far beyond its nutritional role. In Maya creation mythology, humans were literally made from corn dough. The maize god was one of the most important deities in the Maya pantheon. Agricultural cycles were synchronized with the religious calendar. Corn was not just food; it was the substance of human identity. The milpa system that sustained Maya populations combined maize with two other crops: beans (which fix nitrogen in the soil, replenishing what corn depletes) and squash (whose large leaves

shade the ground, retaining moisture and preventing weed growth). This combination, sometimes called the Three Sisters across Mesoamerica, was nutritionally complementary: corn provides calories and carbohydrates, beans provide protein, and squash provides vitamins and minerals. The three crops grown together produced a more complete diet than any one alone, and their agricultural interaction sustained soil fertility far longer than monoculture crops. The milpa system used slash-and-burn rotation: a plot of jungle would be cleared by cutting and burning, farmed intensively for two or three years, then left fallow for ten or more years while the forest regenerated. Critics argued this system could not possibly support large populations: you need too much land left fallow at any given time. But evidence from LiDAR surveys shows that the Maya supplemented milpa farming with intensive permanent cultivation in raised fields, orchards, and managed gardens, creating a mixed agricultural system far more productive than slash-and-burn alone.

Raised Field Systems: Engineering the Wetlands

One of the most dramatic discoveries in Maya agricultural archaeology was the widespread existence of raised field systems in the lowland swamps of the Peten and Belize. Aerial photography in the 1970s revealed vast networks of rectangular platforms separated by drainage canals in areas that are now seasonally flooded wetlands. These raised fields, built up from dredged muck and organic material, created elevated growing surfaces above the water table while the canals provided irrigation, transportation, and aquaculture: fish and turtles living in the canals supplemented the Maya diet with protein. The raised field systems are ancient and labor-intensive. Building and maintaining them required organized community effort coordinated across generations. Their scale in some areas is enormous: thousands of fields covering hundreds of square kilometers in the river lowlands. This kind of agricultural infrastructure is the equivalent of building a canal irrigation system, and it fundamentally changes estimates of Maya population density and political organization. Cities that could organize this level of agricultural engineering had substantial administrative capacity.

Terracing and Highland Farming

In the Maya highlands of Guatemala and Chiapas, where slopes are steep and soils prone to erosion, the Maya built extensive terrace systems — horizontal platforms cut into hillsides and reinforced with stone walls. Terracing dramatically slows water

runoff, reduces erosion, and creates flat planting surfaces on otherwise unusable steep ground. LiDAR surveys in these areas have revealed terrace systems stretching for kilometers that had been invisible under vegetation. Combined with calculations of population density from settlement surveys, the terracing evidence confirms that highland Maya populations were far larger than earlier estimates assumed.

Environmental Stress and Agricultural Collapse

The sophistication of Maya agriculture makes its partial failure all the more striking. Core samples from lake beds across the Maya lowlands reveal a clear pattern in the 9th century CE: massive deforestation, soil erosion, and evidence of drought. The Maya had cleared so much forest to create farmland that regional rainfall patterns were affected — less forest meant less moisture recycled into the atmosphere. Combined with a series of severe droughts in the 9th century documented in paleoclimatic records, this agricultural and environmental stress likely contributed significantly to the abandonment of southern lowland cities. The very success of Maya population growth created the environmental pressures that undermined it.

Key Information: Maya Agriculture

Detail	Information
Primary Crop	Maize (corn) — also religious and mythological significance
Three Sisters	Maize + beans + squash; nutritionally complementary polyculture
Milpa System	Slash-and-burn rotation; plots cleared, farmed 2-3 years, left fallow 10+ years
Raised Fields	Built in lowland swamps; elevated plots above canals for drainage and irrigation
Terracing	Stone-walled horizontal platforms on hillsides; reduces erosion, captures water
Canal Function	Drainage, irrigation, and aquaculture (fish and turtles for protein)

Detail	Information
Environmental Impact	Deforestation and erosion contributed to 9th-century agricultural stress
LiDAR Impact	Revealed much larger scale of raised fields and terracing than previously known

Case Study: Chan Bahlum's Harvest

Chan Bahlum was not a noble. He was a farmer in the lowlands near a secondary city in the Peten, working a raised field plot that his father had worked and his grandfather before him. The canals between the plots needed constant maintenance — dredging the silt that built up, reinforcing the embankments after heavy rain, keeping the drainage channels clear so the fields didn't flood. This dry season had been the third bad one in a row. The rains came late and left early. Chan Bahlum's maize stunted in the field, the ears small and pale. He still owed tribute: a quantity of corn delivered to the city storehouse, a fixed amount the regional lord had set years ago when harvests were normal. He had asked for a reduction twice. The lord's representative had refused. The lord's own stores were running low; he could not afford to reduce tribute from anyone. Chan Bahlum looked at his thin ears of corn and did the calculation he had been avoiding. Even with the beans and squash, even with the fish from the canal, his family would run short before the next planting season if he gave the full tribute. 'Then we go,' his wife said. She meant leave. Leave the field, the canal, the city. Go north, where people said the rains were still good.

1. How does Chan Bahlum's situation illustrate the connection between agricultural failure, the tribute system, and the abandonment of southern Maya cities discussed in the reading?

2. The reading describes Maya agriculture as 'sophisticated.' What evidence from the case study supports this characterization, and what does the tribute system reveal about the political organization needed to sustain large populations?

Multiple Choice

1. What made the Three Sisters planting system — maize, beans, and squash — agriculturally effective?

    a) Squash and beans protected maize from insects that destroyed other crops and reduced yields

    b) The crops were nutritionally complementary and their interaction sustained soil fertility

    c) They could all be grown in raised field systems without irrigation

    d) All three crops matured at the same time, simplifying harvest

2. What did the discovery of raised field systems in Maya lowland swamps reveal?

    a) That Maya agriculture was far more intensive and productive than earlier scholars assumed

    b) That the Maya had abandoned wetland areas as too difficult to farm

    c) That Maya cities were actually built on artificial islands in seasonal lakes

    d) That Maya population estimates were far too high, since wetland farming is very inefficient

3. How did Maya agricultural success contribute to eventual environmental stress and city abandonment?

a) Raised field construction blocked natural river drainage, causing permanent catastrophic flooding

b) Growing populations required so much deforestation that regional rainfall patterns were disrupted

c) The Three Sisters system depleted all soil nutrients after two planting cycles

d) Irrigation canals flooded cities during unusually heavy rainy seasons

Matching

Write the letter of the correct definition on the line next to each term.

Term	Definition
1. ___ Milpa	A) A horizontal platform cut into a hillside to create flat planting space and reduce erosion
2. ___ Raised field	B) Corn; the primary crop and religious symbol at the center of Maya food production and mythology
3. ___ Slash-and-burn	C) The traditional Maya polyculture combining corn, beans, and squash grown together
4. ___ Terrace	D) A land-clearing method using fire, followed by cultivation then fallow periods for forest regeneration
5. ___ Maize	E) An elevated agricultural platform built above swampy lowland, separated by drainage canals

Fill-in-the-Blank

1. In Maya creation mythology, humans were literally made from _____ dough, reflecting the crop's central religious importance.

2. Canals between raised fields served multiple purposes: drainage, irrigation, and _____ — raising fish and turtles for protein.

3. Lake bed core samples from the 9th century CE show evidence of massive _____, soil erosion, and drought, indicating serious environmental stress.

Short Answer

Answer each question in 2-4 complete sentences.

1. Explain how the milpa system worked and why critics originally argued it could not support large Maya populations. What evidence proved the critics wrong?

_____

_____

_____

2. What does the scale and engineering sophistication of Maya raised field systems tell us about Maya political and social organization? What kind of society is needed to build and maintain this kind of agricultural infrastructure?

_____

_____

_____

3. How does the environmental stress hypothesis for Maya city abandonment challenge the idea that the Maya 'collapse' was sudden or mysterious? What does it suggest about the relationship between a civilization's success and its environmental vulnerabilities?

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