

Nixtamalisation

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In news– Recently, a study has thrown light on how Maya people fortified their maize with the chemical process known as ‘nixtamalisation’ and also built indoor toilets in pits they dug into the limestone bedrock of the Yucatan peninsula in Mesoamerica.

Key findings of the study-

- **Nixtamalization is a method by which the ancient peoples of Mesoamerica like the Maya used to soak and cook their maize in an alkaline solution** and make it more palatable, nutritious and non-toxic.
- New study has claimed that its **findings are the first archaeological evidence of nixtamalisation done by the Maya** (dated to the 7th or 8th century Common Era).
- **Maize, beans and squash are called the ‘Three Sisters’** and formed the basis of diets throughout pre-Columbian North and Mesoamerica.
- The researchers noted that the key reason for the spread of maize in the Americas was nixtamalisation which **ensures that the maize that contains amino acids, calcium and Vitamin B2**, can be utilised by the human body. It also **eliminates certain mycotoxins present in maize**.
- The study said that without this treatment, maize-dependent populations are at elevated risk of **pellagra (Vitamin B2 deficiency), calcium deficiency** and mycotoxin poisoning.
- **The alkalising agent for nixtamalization can be obtained in several ways**– One is by **burning mahogany bark** to produce wood ash from which lye, a strong alkaline solution, is leached and **another method is by cooking marine or freshwater mollusc shells in a fire for several hours**.
- Another method is **chunks of limestone cooked for several**

days, to produce quicklime, which is then placed in a container and saturated with water to produce slaked lime, or calcium hydroxide.

- **The researchers excavated two 'chultunes' – pits cut into bedrock, in 2012, at the site of San Bartolo, Petén, Guatemala.**
- **A chultune consists of a narrow opening and a neck leading down straight to a wider interior chamber** that can reach volumes as great as 500,000 litres.
- They found microscopic, modified starch structures known as '**starch spherulites**' in the pits that are consistent with those produced by nixtamalising maize under laboratory conditions.
- The researchers from Boston University, Harvard University and the University of Texas at Austin, **also found eggs of tapeworms at the sites, proving that they were used as toilets.**
- Experts have suggested that **chultunes could have served various purposes, including as storage containers for food and water, burial chambers, sweat baths, latrines and trash pits.**
- The study suggested that **nejayote, wastewater from nixtamalisation, may have been used to lime the chultunes** while they were used as latrines. This was done **to control odours** and inhibit insect and microorganism growth like it is done today.
- The study noted that **this was probably the first time that toilets had been discovered at a site used by Maya commoners.**

Maya people-

- The Maya peoples are an ethnolinguistic group of indigenous peoples of Mesoamerica.
- The ancient Maya civilization was formed by members of this group, and today's Maya are generally descended from people who lived within that historical

civilization.

- “Maya” is a modern collective term for the peoples of the region, however, the term was not historically used by the indigenous populations themselves.
- The largest populations of contemporary Maya inhabit Guatemala, Belize, and the western portions of Honduras and El Salvador, as well as large segments of population within the Mexican states of Yucatán, Campeche, Quintana Roo, Tabasco and Chiapas.
- Some 30 Mayan languages are spoken by more than five million people, most of whom are bilingual in Spanish.