

Cuitlacoche: Pest or Prize?

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Cuitlacoche is a culinary curiosity. A fungus belonging to the Basidiomycetes group, which also includes the common mushroom, the chanterelles, and the wood-rotting, jelly and rust fungi, *Ustilago maydis* or corn smut infects maize ears, causing them to deform into swollen fungal kernels, deep black inside and covered in a greyish-white skin.¹ In a family of more than 5,000 rusts and smuts, *U. maydis* is the only one that is commonly considered to be edible. Its taste is unique: as dark and rich as a kind of mushroomy squid ink, with just a hint of sweet corn; often the odd kernel will still be part of the chopped mixture. Although its flavour is highly distinctive, it tends to be used in the kinds of recipes that would commonly be used for other mushrooms. The name *ustilago* comes from the latin *ustus*, *ustulatos*, meaning burned or scorched, referring to the blackened interior and possibly the silvery, ashen appearance of the exterior.² It is quite soft (becoming softer and slimy as it ages), and like most mushrooms it exudes liquid – in this case a deep black – as it cooks. Although it can infect most cultivated strains of corn and teosinte, and hence may strike any maize crop across the world, only the Mexicans appear to have adopted this substance as an edible wild food. Others, put off by its appearance, and possibly fearing toxicity, dispose of the blighted crop, considering corn smut to be ‘one of the most offensive diseases ever to attack a vegetable’.³ But in Mexico, farmers receive a premium price for the infected crop, and it has apparently been prized since ancient times. This paper considers why this might have come about, and considers the distinct position this wild pest has now attained in the Mexican national cuisine.

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Ustilago maydis infects two plants only, maize (*Zea mays*) and teosinte (*Zea mexicana*), the putative progenitor of maize.⁴ Infected plants develop tumours or galls on their leaves, stems, tassels and ears, and the growth of the plant may be stunted. In the ears, where the edible form develops, ‘the fungus completely replaces the kernel with masses of black spores’, and so has a devastating effect on seed yield. It takes three forms during its lifecycle. First, the sporidium, or single cell, single nucleus form, which can grow by budding on non-living matter, lurking in the soil awaiting the next planting; second the dikaryotic filamentous form, a parasitic and pathogenic form which needs the plant for its growth and which induces disease in it; and finally the teliospore which is formed in the tumours as the disease develops within the plant, and which is eaten.⁵

From a culinary point of view, the best yield of cuitlacoche is achieved if the plant is infected about 6-8 days after the mid-silk growth stage, and the best quality cuitlacoche may be harvested 16-18 days later, once the teliospores are mature.⁶

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Figure 1: Basidiospores



Figure 2: Germination

One of the challenges in researching and discussing *U. maydis* as a food is to decide what to call it, and how to spell it. In Mexico, the dominant spelling is cuitlacoche, which is consistently used in the literature, and boldly printed on the cans which line grocery shelves. American chefs (for example Rick Bayless) have adopted the spelling huitlacoche, which was also initially used by Diana Kennedy. Kennedy switched to cuiclacoche in 2000, finally settling on cuitlacoche in 2003. Other than this, most references by non-Mexicans adopt the US's preferred initial letter h. Mexican chefs, such as Patricia Quintana, whether writing in Spanish or English, usually use the initial letter c. I will refer to it in this essay as cuitlacoche.

The origins of the word explain the tendency to stay close to the original language. According to Pilcher, cuitlacoche translates as 'excrement of the gods'.⁷ More precisely, it derives from the náhuatl words *cutlatl*, meaning excrement and *cochtli* meaning sleep. Apparently,

Although today it seems to us an extraordinary name for a food, for the ancient Mexicans excrement was not waste, but a distillation of foods, and for the most part was considered to be a precious material. In fact, the root of the word derives from one of the Aztec emperors, Cuitláhuac, referring to the dried excrement of the ancient priesthood, from which they made the floor of the temples at the summit of the teocallis.⁸

An alternative explanation is that the name simply alludes to its texture and grey or black colour.⁹

Understandably, English translations of cuitlacoche in recipe books and on menus steer well clear of any reference to excrement, godly or not. The precise terms chosen to describe it vary, depending on the perspective of the writer and, quite probably, the price of the restaurant dish. What premium might we be willing to pay for expensive-sounding 'caviar Azteca'; exotic 'Mexican truffles' and 'corn truffle'; or romantic 'inky corn mushroom'? Conversely, might we not think twice about ordering the slightly challenging 'corn fungus', or the downright off-putting 'corn smut'?¹⁰ A more serious question is why the Mexicans, distinct from any other nationality, did decide to eat it, despite its name, and how long ago the love affair began.

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Figure 3: Centéotl, god of maize (*Codice Vaticano*).



In considering the importance of cuitlacoche, it is wise to remember that it grows on maize, and it is well known that maize had a special, sacred status amongst the native peoples of Mexico.¹¹ The lowland Maya taxonomy of plants highlights maize as *jun-teek*, literally 'one plant', distinct from all other plants which are categorized according to their stem habit (whether trees, shrubs, vines or grasses).¹² The Maya epic, the *Popol Vuh*, describes how man was created from yellow and white maize dough or masa, previous experiments with clay, wood and flesh all having failed.¹³ The Maya worshipped *Yum Kax* as master of the fields, agriculture and corn: the only other plant which merited its own deity was cacao, and it was considered – to the Spaniards' amazement – to be more precious than gold.¹⁴ The Toltec goddess of food, Chicomecoatl, is depicted flanked by ears of corn.¹⁵

Besides Centéotl, their god or goddess of maize, the Aztecs worshipped several deities of corn, representing its various states: Xilonen, the goddess of the tender corncob (*jilote*); and Ilameteuctli, the goddess of dried maize. There was even a god to watch over the sowing of the maize, Xipe-Totec. Maize was also an important component in the worship of other Aztec gods, the first ears of the harvest being offered to Tláloc, god of rain.¹⁶ The fact that mushrooms were considered by the Indians to take on the life of the vegetation they grew upon suggests that cuitlacoche would retain a strong identification with its host, maize, for those who consumed it.¹⁷ Given maize's place at the heart of both the spiritual and physical life of Mexican cultures, it is perhaps hardly surprising that the people would have decided to eat cuitlacoche when it appeared on their crop: anything associated with this staple gift of the gods should be considered a heaven-sent blessing rather than a curse, until proved otherwise. In this instance it seems that the Neolithic propensity to experiment with foods coincided with a religious imperative.¹⁸ This, combined with a Mexican habit of consuming fungi, led to a delicious discovery for the cook and her audience. Cuitlacoche's eventual place in the everyday is emphasized by the folk tale of 'Corn Soot Woman', collected from the Conchiti (a Native American Pueblo tribe in New Mexico). Corn

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Soot Woman weeps at being separated from the good ears of corn, saying that she is not rotten, and promises that if they keep the sooted corn, the new ears will grow fat, just like her. The women of the corn-grinding society agree, and give the soot a ceremonial name, *Wesa*, from then on singing songs to her as they grind the corn.¹⁹

Although fungi were foraged for and eaten throughout the ancient world (for example in Greece, Rome and China), they only appear to have formed a significant component of the ancient American diet in Mexico. In a study of the diet of the Inca, Muisca and Aztec peoples, only the Aztec diet includes any edible fungi.²⁰ This may go some way towards explaining why it is only in Mexico that cuitlacoche has long been known as a food. Garcia Rivas includes a recipe for a huitlacoche dish in the mushroom chapter of his study of *Prehispanic Mexican Cookery* (simultaneously providing a rare example of a Mexican using the leading h). The dish is a stuffing for tortillas made from green chiles, epazote, spring onions and huitlacoche, served with a salsa of poblano chiles, epazote and poultry broth.²¹ Although it is well known that there was no onion in the pre-Hispanic larder (onion was introduced to the Americas by the Spanish) a small, native onion, *xonácatl*, is described by Bernardino de Sahagún in his *General History of the Things of New Spain*, and it is presumably this that would have been used originally.²² Bernardino de Sahagún also wrote lengthy descriptions of the mushrooms eaten by the indigenous population, recording the nuahtl names for many of them.²³ However, he does not draw particular attention to cuitlacoche; it is simply another mushroom.

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Most contemporary writers choose to imbue cuitlacoche with a whiff of ancient-historical romance, describing it as a special Mexican ingredient 'treasured since pre-Columbian times' that has been 'used in ceremonial tamales and dark mole sauces for centuries'.²⁴ It is likely to be true that it has been known and consumed since the earliest domestication of maize, after the first crops had succumbed to infection by *U. maydis*, but very little evidence of its original discovery and incorporation into the diet survives.²⁵ Cuitlacoche is only available at certain times of the year (in the rainy season, from July to November); its appearance is somewhat unpredictable and mysteriously open to chance; and it has an unusual and desirable flavour – but these qualities are no different to other edible mushrooms. Apart from its connection to the revered maize, it is not clear that it was any more or less valued than other fungi which were all seen as good, seasonal wild foods. The similarity between traditional recipes

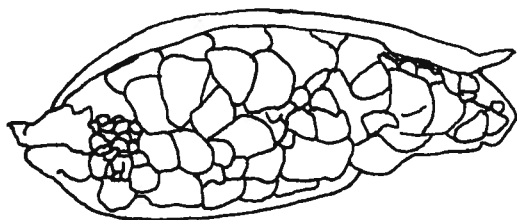


Figure 4: Maize ear infected with cuitlacoche.

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for cuitlacoche and other mushrooms bears this out: in most cases, they are interchangeable.²⁶ Indeed, the descriptions by de Sahagún, Bernal Díaz and other early conquistadors all include references to daily diet, foods for feasts, and ritual foods: but cuitlacoche does not appear to be highlighted by any of them as a particular delicacy, curiosity or ceremonial food.²⁷ An *atole* (thin gruel) with cuitlacoche, *Tsinari*, is said to have been drunk by the *maráakame*, or singers to the gods, to replenish energy lost in the night and give them strength to sing, but presumably this was simply a seasonal variation on the traditional breakfast.²⁸ So why is cuitlacoche now singled out as one of the more important pre-colonial Mexican cultural symbols, and when did this start?

The tendency to romanticize the history of cuitlacoche as an ingredient is a relatively recent phenomenon, and represents a broader shift in Mexican national and cultural attitudes. Cuisine is, along with art, language and landscape 'among the things most evocative of the national identity'.²⁹ In the case of Mexico, prior to the revolution in 1910, the social and political elite had defined the national cuisine as essentially European, excluding native ingredients and dishes, especially corn, from 'respectable dinner tables'.³⁰ If corn itself was discouraged, what fate would lie in store for its pathogen and obligate parasite? The *Nuevo Cocinero Mexicano en forma de Diccionario* published in Paris in 1888 makes no reference whatever to cuitlacoche, even in its general maize and mushroom entries, implying that at this stage it was not viewed as an acceptable food for the middle-class readership of that publication. It was too indigenous; too wild.

Fortunately, corn survived the attempts to replace it with the more European wheat, and as the new Mexican nation asserted itself through a deliberate programme of nationalism and rapid economic development, all kinds of 'peasant' foodstuffs became national symbols for all classes. Prominent cookbook authors began to seek out and popularize Indian regional dishes. Josefina Velázquez de León, Mexico's 'foremost advocate of culinary nationalism' in the early to mid-20th century, wrote more than 150 cookbooks 'revealing the mysterious nuances of regional cuisines and exalting lower class dishes such as enchiladas as symbols of national identity'.³¹

Cuitlacoche, however, was one of the last ingredients to become acceptable to the middle and upper classes who, as late as the 1940s, 'considered eating this spore to be a disgusting Indian habit': it had, of course, remained a key component of the common seasonal diet throughout.³² It was initially made acceptable by associating it with French cuisine: a crêpe of cuitlacoche covered in béchamel sauce became the signature dish of Jaime Saldívar in Mexico City.³³ In the later 20th century, formal governmental and other institutional dinners (such as those given by the National Bank of Mexico) gradually began to feature cuitlacoche in their menus, until eventually 'Mexicans considered it one of their nation's great contributions to international haute cuisine, a sort of Mesoamerican noble rot'.³⁴ Today cuitlacoche is viewed as a desirable, high class ingredient; a flag-waving representative of 'nuevo cocina Mexicana'. Smart restaurants from Mexico City to

Oaxaca feature cuitlacoche tarts, quiches, ravioles, risottos and soups on their menus, and it appears as the star ingredient in stuffings for chiles, squid, fish and chicken.³⁵ In these contemporary guises it has been reinterpreted as an acceptable component of the middle and upper class diet. Its image is that of a distinctive wild food tamed, retaining an exotic edge, and imbued with national pride.

It also retains its popular appeal, continuing to be available across the country as street food, prepared in the traditional style. The National Museum of Popular Culture published a cookbook in the late 1970s which recognized 605 distinct traditional ways of cooking corn, 11 of which are recipes for cuitlacoche. For example, *Quesadillas de cuitlacoche* are attributed to Tlaxcala, whereas Mexico City takes ownership of *Cuitlacoche con elote y calabacitas* (cuitlacoche with sweetcorn and squash).³⁶ In the course of two weeks early in the 2004 rainy season I sampled *tlacoyos de cuitlacoche* in Mexico City's Colonia Roma; and numerous *quesadillas de cuitlacoche* in Mexico City and Oaxaca, the most delicious of which were the deep-fried version at the Comedor in Coyoacan.³⁷ These simple dishes remain an inexpensive but delicious component of the local diet in the Distrito Federal (Mexico City), Hidalgo, Michoacán, Tlaxcala, Puebla and most of the central regions. Particular regional specialities include a drink called *esmoloc* from Chiapas, and the Tlaxcalan *mole prieto* (black *mole*), made with dried cuitlacoche.³⁸

The price of cuitlacoche varies according to the season and the quality of the product, but even though some have complained that it used to be the cheapest of foods and is now relatively expensive, it remains affordable.³⁹ At the Mercado de la Merced in Mexico City in July 2004, prices were in the range of 15-17 pesos per kilo (€1-€1.20; \$1.30-\$1.50), for black piles of ready-chopped cuitlacoche taken from cobs infected to the core. In the more refined San Juan market, packaged whole cobs, still recognizable as corn, and with a more attractive growth of cuitlacoche cloaking some remaining kernels, retailed at 70 pesos per kilo (€5, \$6.10). In both markets, the cuitlacoche is sold alongside the wild mushrooms that share its season, but is less expensive than most of them.

Major Mexican food manufacturers such as Herdez and La Costeña have been producing canned cuitlacoche since about the 1980s, and this is now generally accepted as an acceptable substitute if you can't obtain the fresh product.⁴⁰ Outside Mexico, cuitlacoche has become increasingly popular in the USA as the Mexican population has grown, and some farmers in Florida and Pennsylvania have begun to cultivate it in order to provide local supplies to upscale, mainly Mexican, restaurants. Nonetheless, Anglo-Saxon prejudices run deep, and stories of exploding threshing machines at harvest time (the spores of smut creating a black cloud 'which was more explosive than coal dust'), and ill-founded concerns about toxicity, no doubt continue to deter farmers from encouraging the proliferation of cuitlacoche on their crop.⁴¹ Even though losses as a result of infection by *U. maydis* are 'usually less than 2% annually over large areas', and cuitlacoche attracts a premium price compared to corn, research into resistant strains of maize and protective means of cultivation continues.⁴² At the same time, some more enlightened researchers, perhaps sniffing a market, have begun to acknowledge that the techniques developed

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whilst researching the elimination of the fungus could in fact be used to develop cultivation methods for a more consistent product.⁴³ For the most part, however, beyond its culinary home in Mexico, cuitlacoche remains a dark, inky taste of the wild.

Notes

1. Banuett, p. 181; Herrera & Ulloa, p. 295.
2. Ulloa & Herrera, p. 188.
3. Sommer (2001), p. 16.
4. Banuett, p. 181.
5. Banuett, pp. 182-183.
6. Grogan, p. 1.
7. Pilcher (1998), p. 131.
8. Zurita, p. 217: 'Aunque hoy parezca extraño nombrara así a un alimento, para los antiguos mexicanos el excremento no era un desecho, sino un destilado de los alimentos, y por lo tanto podía considerarse materia preciosa. De hecho, la raíz forma parte de uno de los emperadores aztecas, Cuitláhuac, que significa el excremento seco de los sacerdotes ancianos con que se hacía el piso de los adoratorios que se encontraban en la cima de los *teocallis*.' (My translation.)
9. Herrera & Ulloa, p. 295.
10. Weigner; Bayless, p. 159; Kennedy (1972), p. 123.
11. Fernández-Armesto, pp. 34-35.
12. Atran & Ucan Ek', p. 50.
13. Coe (1999), p. 41.
14. Covo T, pp. 52-53, 59.
15. A carved stone relief of Chicomocoatl in the Museo Rufino Tamayo in Oaxaca shows corn cobs to the right and left of the goddess' face.
16. *El Maíz, Fundamento de la Cultura Popular Mexicana*, pp. 39-40.
17. Atran & Ucan Ek', p. 50: 'All informants agree that mushrooms (*xikin-che*' lit. 'tree ear') have no *pusik'al* (lit. heart) and are not plants but take life away from the trees that host them'.
18. Bober, p. 16.
19. Benedict, p. 15.
20. Rojas de Perdomo, pp. 28-31.
21. García Rivas, p. 132.
22. Barros & Buenrostro, pp. 8, 21.
23. Rojas de Perdomo, p. 47.
24. Bayless, p. 159; Quintana, p. 274.
25. In 1949 Paul C. Mangelsdorf discovered corncobs in a cave in New Mexico, which were carbon-dated to 5,600 B.C., demonstrating the long history of the domestication of maize. No ancient traces of *Ustilago maydis* were reported.
26. Kennedy (1984), pp. 144-145, 240; Kennedy (1975), pp. 65, 76.
27. This suggestion is not the result of exhaustive study of the codices, and it is possible that references may be found. I was not able to uncover any in my reading of English translations of those authors listed in the bibliography.
28. Barros & Buenrostro, p. 49.
29. Pilcher (1998), p. 143.
30. Pilcher (1998), p. 153.
31. Pilcher (2003), p. 200.
32. Pilcher (1998), p. 131.
33. Pilcher (1998), p. 137. According to Susana Palazuelos (p. 97) a dish of cuitlacoche crêpes with poblano sauce was first devised for the Emperor Maximilian and his wife Carlotta. This would place

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its origins between the years 1864-67, but I have been unable to trace an original source for this. The fact that cuitlacoche is missing from the *Nuevo Cocinero Mexicano en forma de Diccionario* of 1888 casts doubt on the likelihood that such a dish was served in the colonial court.

34. Pilcher (1998), p. 131.
35. Luengas.
36. *El Matz, Fundamento de la Cultura Popular Mexicana*, pp. 61-62.
37. A *tlacoyo de cuitlacoche* is a thick, oval corn tortilla (often blue corn) stuffed with yellow (*hava*) bean paste, topped with cuitlacoche, and served with salsa, coriander and chopped onion. A *quesadilla de cuitlacoche* is a normal corn tortilla stuffed with cuitlacoche, folded in half and either fried or cooked on a *comal* (clay cooking surface).
38. Zurita, p. 217.
39. Kennedy (1984), p. 144.
40. La Costena's marketing department confirmed that cuitlacoche is only a 'medium volume' product, so no free samples will be provided to accompany the presentation of this paper!
41. Sommer (1995), pp. 21-22.
42. Snetselaar, Carfioli & Cordisco, p. 1390.
43. Snetselaar, Carfioli & Cordisco, p. 1398. For example, through the use of sterile male varieties or removing tassels before pollination.

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