

CORN SOOT WOMAN'S TIMELESS LESSON: EAT YOUR SMUT

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ABSTRACT

A Cochiti Pueblo (New Mexico) folktale that encourages women to not discard maize afflicted with corn smut (*Ustilago maydis* D.C.) might be puzzling to most non-native farmers and gardeners in the U.S. who treat this fungus as a repugnant pest. A survey of studies of southwestern Native American food sources shows that corn smut was enjoyed as food and used for medicine and other purposes. In southern Mexico, **cuitlacoche** (corn smut) is both a traditional food and a highly praised gourmet item, available fresh in season as a market vegetable and year-round as a canned food. The author proposes that the U.S. has rejected corn smut as food because it simply rejects most fungal foods and that there were unfounded concerns about its toxicity. Based on **cuitlacoche's** success in Mexico City's *Nueva Cocina Mexicana*, corn smut may find acceptance as a new ingredient for southwestern *nouvelle cuisine*.

RESUMEN

El relato de los cochiti (de Nuevo México, USA) que anima a las mujeres a no desechar la mazorcas de maíz afectadas por *Ustilago maydis* DC puede ser desconcertante para la mayoría de los agricultores y jardineros no indígenas quienes ven a este hongo como una plaga repugnante. Una encuesta de los estudios del suroeste sobre las fuentes de alimentos de los nativos de Norteamérica muestra que este hongo fue disfrutado como alimento y usado para la medicina y otros fines. En el sur de México, el **cuitlacoche** es una comida tradicional y un elemento gastronómico altamente apreciado, disponible a lo largo del año tanto fresco en los mercados como enlatado. El autor propone que los norteamericanos se han resistido a consumo del tizón del maíz debido a su rechazo generalizado de los alimentos a base de hongos y a preocupaciones infundadas sobre su toxicidad. Basado en el éxito de **cuitlacoche** en *Nueva Cocina Mexicana* de la Ciudad de México, el tizón del maíz puede encontrar la aceptación como un nuevo ingrediente de la *Nouvelle Cuisine* del Suroeste de los Estados Unidos.

Introduction

Franz Boas was at the Cochiti Pueblo in northern New Mexico in the summer of 1924 when he recorded a **Ko'yawe** story from an older woman who held a ceremonial position there. The **Ko'yawe** or Women's Corn Grinding Society meet together to grind corn¹ for prayer meal (Lange, 1959). According to the tale, four women were sleeping in the society room so they could begin grinding before sunrise. When they began to discard sooted ears (ears infected with corn smut), a woman appeared and protested. It was Corn Soot Woman, who promised their corn would be fat if soot was included. Thereafter they ground sooted ears with the rest and used her name in their songs (Benedict, 1931).

This folktale might sound far-fetched to many modern U.S. farmers and gardeners who

think of smut as a most repugnant pest. But many southwestern native peoples have used smut for food and other purposes. In southern Mexico, corn smut is called **cuitlacoche**, and enjoyed in both traditional cuisine and by innovative gourmets. Unlike Mexico, the United States could be rightly characterized as a country that is "mycophobic," rejecting most fungal foods, and could not have been expected to adopt as food an agricultural pest considered (albeit wrongly) by some researchers to be harmful for livestock and human consumption. Other Native American foods have been recently introduced in *Nouvelle Cuisine*; it is proposed that corn smut possesses the qualities needed to become popular.

Evil incarnate or simple fungus?

Smut "looks like evil incarnate" to one gardener who asked in a national gardening magazine's help column how to control it. To that writer it's "the ugliest looking blight I've ever seen. Ears swell and burst forth in a disgusting array of huge, sickly white kernels filled with black powder". The answer, solicited from a Cornell University extension agent, is to remove and destroy the smut, grow tolerant corn varieties, and clean up old cornstalks and ears in the fall (Anonymous, 1989). "Cut and destroy" is the similar advice given in another gardening magazine (Poncavage, 1989). One gardener (Ann Leonard, pers. comm. 1988) told me she wears rubber gloves when disposing of smutted plants in her Wisconsin corn field, and was astonished to find it for sale as a canned food in Nogales, Mexico.

Ustilago maydis grows only on maize and teosinte (Fischer, 1953), attacking stalks, leaves, ears, and tassels (De León, 1984). On the ear, infected kernels become fleshy, conspicuous white galls. The galls are composed of smut fungus intermixed with enlarged corn cells, all covered with a semi glossy membrane. As the gall matures the membrane turns dies and cracks, releasing masses of dry, powdery, black chlamydozoospores. The spores overwinter on the ground and germinate to produce haploid sporidia. The sporidia form secondary sporidia that are carried by wind and other agencies to young corn plants.

Mycelia from spores of two sexes are needed for active development, which mostly occurs in axils and corn leaf whorls (Christensen, 1963; Westcott, 1971).

While corn smut can damage all types of corn, it is most destructive to sweet corn, with a recent average annual loss of 3 to 5 percent (Westcott, 1971). Many control measures have been tried against corn smut, most without success. Because of its life cycle, it cannot be controlled by seed treatment. Fungicidal sprays reduce smut, but they also reduce corn yields. There may be a biological control someday. Current practice is to use resistant maize varieties and, in small gardens, to remove and destroy infected plants (Christensen, 1963; Westcott, 1971).

Ustilago maydis found its way into medical science in the last century to hasten childbirth. It

could be bought in British pharmacies "as an irregular globose mass, sometimes six inches thick, consisting of blackish membrane, enclosing a large number of brownish black nodules, and has an unpleasant smell and taste." (Rolfe and Rolfe 1925) It was described as having the same effects as ergot but without the toxicity, increasing the force without increasing the duration of uterine contractions. From 1882-94, *Ustilago* was in the *U.S. Pharmacopoeia* for this purpose (Vogel, 1970). In the *Farmacopea Mexicana* recommended dosage was 4 c.c. of the fluid extract from raw smut (Martínez, 1969). The Zuni people used corn smut in this fashion (see below), and were perhaps the original source of this practice (Vogel, 1970).

As it is not considered a food source in the U.S., the only nutritional information found on corn smut is one early report of its chemical composition (see Table 1).

Corn smut use by southwestern Native Americans

A review of Southwestern ethno botanics shows corn smut was utilized by Hopi, Navajo, Pima, Apache, Zuni and Cochiti. Kavena (1980) reports that older Hopis consider **nanha** (corn smut) a real delicacy, and included a fried **nanha** recipe in her cookbook, *Hopi Cookery*. Kavena tells us that **nanha** is the focus of a traditional game played after picking sweet corn: participants chase one another hoping to smear corn smut on those they catch, with boys usually sided against girls. Harvest-time smut play has continued as recently as last year (Denise Masayeva, pers. comm. 1989). In the mid-1930s, it was joked that **nanha** on your corn resulted from defecating in your field (Whiting, 1966).

The Navajo called corn smut *nada?ca'n* "corn" manure" and used the spores for blackening during the Eagleway ceremony (Vestal, 1952).

Corn smut was often eaten raw in the field by the Western Apache, reports Buskirk (1986). It was also taken home and boiled. In one recipe, smut is wrapped in corn husks, boiled solid, poked onto a stick and sprinkled with a corn meal. Buskirk notes girls rubbed it on to bleach the skin.

One Pima informant told Castetter and Bell (1942) that “as a boy, he used to see people putting ears heavily infested with corn smut on coals to roast, then taking off the smut and eating it without other preparation.” Amadeo Rea (pers. comm. 1990) has also recorded Pima use of smut.

Cushing wrote how the Zuni ceremonially stored fresh corn soot (smut) with their seed corn each year, and before planting would sprinkle the kernels with corn smut spores, among other items. Corn smut was held to symbolize the “generation of life” (Cushing, 1920). The Zuni also used corn smut as a medicine given to women during parturition to hasten childbirth by increasing the severity of labor. It is given also to stop hemorrhage after childbirth, and for abnormal lochial discharge. The treatment is the same for all three ailments -a pinch of *Ustilago* is put into a small quantity of warm or cold water and the infusion is taken at intervals (Stevenson, 1915).

Some Zuni continue to eat corn smut as a table vegetable, usually fried in butter or fat (Charles Miksicek, pers. comm, 1988).

From the introductory tale above, one could assume the Cochiti use corn smut, or at least they did in 1924. Lange’s anthropological study of the Cochiti Pueblo (1959) covers agriculture, diet, and food preparation, but does not mention corn smut. This omission may indicate: (1) smut was no longer used, (2) Lange never noticed the use of smut, or (3) Lange saw no need to register corn smut’s use separately from the many ways corn is utilized. Corn smut’s absence from any list of foodstuffs is not equivalent to a report that “corn smut is not used,” and the omission of other groups from this survey does not indicate conclusively that corn smut was ignored or rejected by them.

Others use smut

The author has focused research on smut lore from U.S. Southwest tribes, but there are reports of corn smut use from elsewhere, too. The earliest encounter of the Native American use of smut in the U.S. was recorded by Brickell (1737) who writes how an Indian doctor cured a planter’s “ulcer” (leg sore) with “the rotten Grains of the *Maiz*, or *Indian Corn*, well

dried and beaten to a Powder.” The Cherokee used smut as a salve (Hamel and Chiltoskey, 1975). The Taraburnara Indians of north-central Mexico cook *sunu o’Uchila* (corn smut) with fat, onions and cilantro (Trias, 1982). The Pima Bajo of Sonora, Mexico, used corn smut when it was white but thought it poisonous as it became black (Pennington, 1980). The shoot smut, *Ustilago esculenta*, of wild rice is an old favorite in China and Japan (Fischer and Holton, 1957), and probably prepared the way for corn smut’s success in China (Anonymous, 1989).

Cuitlacoche

Cuitlacoche (sometimes written *huitlacoche* or *guiltlacoche*) is a traditional food in central Mexico that has recently been promoted in status amongst gourmet cooks. **Cuitlacoche** is a word derived from two nahuatl words that mean “sleeping excrement” (Robelo, n.d.). Martínez (1936) states that many people use **cuitlacoche** as food and described a recipe for using it in *quesadillas* similar to one given by Kennedy (see below). “I quite imagine that *huitlacoche*, the corn fungus, may have been the ambrosia of the Aztec gods” Kennedy (1986) writes in her comprehensive Mexican cookbook. Kennedy, who has done her share to popularize it, says “it is perfectly delicious, with an inky, mushroomy flavor that is almost impossible to describe.”

In an earlier cookbook, Kennedy (1978) wrote, “You can find small quantities of **huitlacoche** in Mexican markets -only, unfortunately, those in and around Mexico City where it is much esteemed.” It is readily available and at its best “well into and just after the rainy season, say from July to October.” She also says there is limited production of canned **huitlacoche**, which she finds rather dry and tasteless.

Gary Nabhan (pers. comm. 1987-89) told me he has ordered *quesadillas* (corn tortillas with cheese) in a Mexican cafe and was given a long list of mushrooms to choose from for filling -the local varieties must be explained, but everyone knows **cuitlacoche**.

“Apart from being the most sought-after filling for *quesadillas*,” writes Kennedy (1986) whose book offers such a recipe, “**huitlacoche** is made into soup -or, more elegantly, stuffed into thin crepes.”

La Nueva Cocina Mexicana is the equivalent of what is called *nouvelle cuisine* in the U.S. -the use of fresh seasonal produce in innovative, elegant combinations at the classiest restaurants. Writing on this phenomenon, Kimball says “**cuitlacoche**, the rich black truffle like corn mushroom, turns up in all the nicest places, used as a filling for crepes, ravioli or a boned chicken breast” (Kimball, 1987). One of these *Nueva Cocina* chefs, Patricia Quintana (1986), describes **cuitlacoche** as “a corn fungus disdained by United States farmers ... [and] cultivated as a delicacy since pre-Columbian times by Mexicans who consider the swollen, black kernels to be a rich and subtle improvement on the mushroom”. In her lavish cookbook, the recipe for *Crepes de Cuitlacoche* notes that if **cuitlacoche** is not available mushrooms can be substituted, in deference to her U.S. readership.

The U.S. rejection of smut

The U.S. has never adopted the Native American practice of eating corn smut -- it's not sold fresh in the market, and to my knowledge canned **cuitlacoche** has never been imported. This rejection or food avoidance can be explained as symptomatic of the U.S.'s general distrust of fungal foods. The fact that smut was once considered toxic makes it very clear why it isn't considered food.

Fieldhouse (1986) lists the reasons for food taboos and avoidances (see Table 2). The U.S. avoidance of smut might best be placed in the categories of Disgust (“evil incarnate”), Fear of infertility (belief that is caused abortions), and Hygiene (belief that it is toxic).

Why is corn smut disgusting to Americans? R. Gordon Wasson (1957) proposed the theory that cultures are either “mycophobe” or “mycophile,” that is “each people either rejects and is ignorant of the fungal world or knows it astonishingly well and loves it.” Rolfe and Rolfe (1925) surveyed the “More Civilised (sic) Races” for the degree in which edible fungi enter into their diets, and found the United States ignored most its native fungi, “and progress towards their coming into general use is very tardy.” The U.S. rejects smut because it rejects most fungal foods.

Whether smut was injurious and toxic to humans and animals was controversial until the early part of this century. Corn smut was suspected of causing general weakness, falling out of hair, abortion, convulsions, paralysis, and even death of animals (Arthur and Stewart, 1900). To prove corn smut harmless, one researcher in 1784 ate smut spores before breakfast for two weeks, put them into wounds and used them as snuff, with no ill effects (Christensen, 1963). In Mexico, where there was some concern that eating corn smut would cause teeth and hair to drop out, its widespread use without ill effect was attributed to cooking it (Madariaga, 1919; Martínez, 1969). Scientific experiments proved most of these suspicions wrong. Christensen (1963) reviews these studies and finds that smut can only be implicated in causing respiratory and skin allergies in some people.

Is there smut in your future?

Nouvelle cuisine, especially as practiced in the U.S. Southwest, has turned to Native American and Mexican foods in its search for new ingredients. Using “Blue Corn” as an example, we see that successful new foods have two qualities: (1) it is similar to foods already used but have an easily discernable difference (blue corn is just corn that is blue) and (2) it lays claim -- truthfully or not -- to some specific region or ethnic group (Native Americans use blue corn). Some other foods recently promoted as Native American include amaranth, wild rice, quinoa, Anasazi Beans, Aztec Beans, tepary beans, Wild Wheat, blue popcorn, and red popcorn.

Corn smut could easily join this list, if some enterprising marketers would make it available. For elegant restaurants, the serving of smut fresh in season, when it is known to be at its best, could be a selling point. While the U.S. in general is “mycophobic,” there are ethnic groups and individual mycophiles who would probably also be receptive to trying smut. The eating of smut has been endorsed by some authors (Kennedy, 1972, 1978; Kavena, 1980; Drees, 1986; Dahl, 1987); it is ripe for popularization.

Corn Soot Woman would be pleased to see it so.

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Tiraje: 500 ejemplares

Nuestra portada:

El título **ETNOBIOLOGÍA** se refiere al dominio de esta disciplina y al objeto de su quehacer.

La avicultura de traspatio es una estrategia ampliamente distribuida en el mundo. En México, tiene como antecedente a la cría del nativo guajolote opavo (*Melleagris gallopavo* L.). A partir del siglo XVI, se incorpora de manera vigorosa la cría de *Gallus gallus* L. (de origen asiático) formando una parte muy importante de la agrobiodiversidad de los solares o huertos familiares campesinos e indígenas actuales.

La fotografía, tomada en el 2006 en una vivienda tsotsil de de Santa Martha, Chenalhó, Chiapas, muestra a una gallina criolla empollando en un nido donde las plantas nativas (entre ellas pteridofitas) conforman la cama. Como parte de la vivienda tradicional, diversos recursos maderables también pueden ser apreciados en esta bella imagen.



Foto: Ramón Mariaca Méndez (El Colegio de la Frontera Sur, sede San Cristóbal de las Casas, Chiapas, México)