Green Gold of the Galleons: Culinary Spices or Medical Supplies? Economic Plant Journeys from Mexico to the Philippines in the 'Age of Empire'

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Abstract: Attention has been growing in recent years on the transfer of Mesoamerican medicinal plants to the rest of world during the seventeenth to nineteenth centuries. For 250 years Mexico and the Philippines, both former Spanish colonies, were directly linked by the Philippine-Mexico galleon trade, which regularly made the Pacific crossing between 1565 and 1815. This paper and accompanying presentation will build on existing knowledge of the spice and food plant exchanges between Mexico and the Philippines facilitated by the galleon trade, to present botanical case studies of Mesoamerican plants and their nonlinear pathways into Filipino cuisine and culture that are evident today.

What was Green Gold to Manila?

During the Spanish colonial period (*c.* 1565-1899), the Philippines served as an essential trading hub for the Spanish Empire, where European, Asian, and American cultures crossed and exchanged goods, metals, and ideas. This was made possible by the discovery of a direct route between the west coast of Mexico and the Philippine Islands, a route that came to be known as the Manila-Acapulco Galleon Trade. The 'Spanish East Indies' were initially described to the Spanish Crown as islands teeming with natural resources- exotic food and drug plants to rival the Dutch and Portuguese supplies, mountains of gold, endless supplies of beeswax- with the opportunity to gain direct access to Asian trade. But the term 'green gold' has a certain connotation in the modern literature; we think of herbs and spices like tea, cacao, nutmeg, and cloves, botanicals deemed precious and shipped by the tons from Asia and the Americas to satiate a growing European appetite during the early modern period.[1] Less attention has been paid to the movement in the other direction. What 'green gold' was being carried into Asia-Pacific?

Numerous fruit trees and food plants were introduced to the Philippines from the Americas that we are familiar with today. Chief among these are the pineapple, papaya, guava, avocado, sugar apple, Manila tamarind, sweet potato, chayote, peanuts, cashews, and, of course, cacao and coffee. If you ask a Filipino to list a few traditional dishes, chances are

at least one will start with tomato (according to Doreen Fernandez it is 'is as indispensable to Philippine cooking as it is to Mexican cuisine'), and could contain potatoes and corn.[2] These Mesoamerican plants are Filipino food because they have become so.

The assimilation of these various plants into Filipino culture was not necessarily immediate or straightforward, and use-knowledge likely changed over time. What clues for these trends can be parsed out from the surviving botanical literature? Such a task is complicated by the obvious fact that the main botanical references from this period were written by missionaries and colonizers who reinforced the insertion of these new plants into the Philippine landscape according to European medical tradition and practices.[3] As part of a larger ongoing study, we briefly review here the changing use-knowledge of two culinary plants, *achuete* (*Bixa orellana* L.) and *apasote* (*Dysphania ambrosioides* (L.) Mosyakin & Clemants), during the period in which they were introduced, the 'Age of Empire'. Doing so can reveal a richer historical context for these foodstuffs that, despite being material evidence of a dark colonial past, still finds appreciation on plates today.

Case Study 1: Bixa orellana L., 'Achiote' or 'Achuete'

Bixa orellana L. is the species name of a shrub or small tree originating from the tropical regions of the Americas with distinct white and red-purplish flowers and hairy red pods containing seeds dusted in red powder. This red powder is the spice usually sold in the UK and US by the names *annatto* or *achiote,* and in the Philippines its names includes variations of *achuete* in Bisayan, Ilokano, and Tagalog. These names derive from the Nahuatl name for the tree, *achiotl*.

Achuete in Early Records: A Food Spice with Medicinal Qualities

Prior to European contact with the Americas, *achuete* was well known to colour the froth of the *xochiaya cacahuatl,* one of several variations of the cacao beverages used for religious and social purposes, and contained several flower spices.[4] Cacao mixed with achuete may have symbolised blood, and white maize bones, in Mayan stories of birth, rebirth, and creation.[5] In addition to using its bark for rope-making and wood for fire, it was also used to make red body paint and traded and used as dye among the Aztecs and Mayans, the Incas and Mohicas, as well as the Chaco.[6] By the time the Spaniards set foot in what is now Mexico, *achuete* was a well-established spice plant in Tenochtitlan, the capital of the Aztec empire, and a description of the plant's medicinal uses was written in the de la Cruz-Badiano Manuscript. This is the oldest surviving American herbal, completed in the Franciscan monastery in Tenochtitlan soon after its fall; it was written in the Nahuatl language by Martín de la Cruz, a member of the young Aztec nobility, and translated into Spanish by Friar Juan Badiano. Here as a medicine, *achuete* was recorded as an ingredient in an astringent wash to treat genital infection, and as an ingredient in a mixture for urinary problems.[7]

Achuete was actively cultivated in the Americas prior to European contact. In 1526 Oviedo noted in his *Historia Natural* that the tree was both wild and cultivated across Nueva España and Terra Firme, the northern Spanish territory of South Americas.[8] In Spain's first royal scientific expedition begun in 1570, Hernández observed the tree was widely esteemed and planted around houses in Nueva España.[9] The plant was possibly one of the first species transported from America to the south of Asia and to Africa in the earlier sixteenth century, perhaps through the Portuguese trade that linked Brazil to Goa in India.[10] It is possible that *achuete* was already present in Asia by the time of Magellan and his crew first arrived in the Philippines in 1521. However, considering the direct link between the Philippines and Nueva España, *achuete* is likely to have been repeatedly introduced through the galleons. One potential clue is the direct introduction of the Nahuatl word *achiotl* into the Philippine lexicon, as evident in the phonetic similarities we see today in Filipino names such as *achuete, atsuete, asuete, chotis*, and *sotis*).[11]

Achuete in Europe: Beyond the Food-Medicine Interface

Achuete appears to have been considered an insignificant culinary spice in the early modern global trade in comparison to the fragrant and flavourful spices like nutmeg, cloves, cinnamon, and pepper. It did, however, constituted a regular part of the pigment trade that rose in the latter sixteenth century and continued through at least the end of the 18th. The spice was known in this context, as a colourant for yellow silks, a finishing dye, and a red pigment alternative to the one produced by the far more costly cochineal.[12] We know *achuete* was listed among the cargo being shipped from the Spanish West Indies to Europe in Woods Rogers' famous 1708-1711 voyage.[13] The Spanish ship *Nuevo Constante* was reportedly carrying about 5,000 pounds of *achuete* bound for Cadiz when it wrecked off the coast of Louisiana in 1766, along with over 40,000 pounds of other dye products.[14] *Achuete* in England was described in the late-eighteenth century by the name 'dyer's tree', used as 'a drug, the produce of Spanish America [...] brought to England (for the use of the dyers, principally)'; 'the preparation [is] made by the druggist, both in England and in the country [...] the pigment, it is said, was formerly collected in Jamaica: but has of later years been brought there (in seproons, or bags made of undressed hides) from the Spanish settlements'.[15]

The availability of *achuete* in Europe for textile purposes from the sixteenth century onwards may have encouraged a new use for it in food: cheese. English cheesemakers, realizing they could skim the cream off and sell it separately, used *achuete* as a 'trick' to colour the low-fat cheese, since the natural yellow colour of a full-fat cheese served as a measure for its quality.[16] Surveyor William Marshall complained in 1789 that the 'crime of colouring cheese' had 'long been practiced by the Glocestershire dairywomen', and that, 'such cheese having been found to bear a better price, (either from its intrinsic quality, or because it pleased the eye better) than cheese of a paler palor, they set about *counterfeiting*

nature'; he then detailed the entire process of using annatto and also noted that the practice had spread to other countries.[17] This cheese colouring practice continues today; *achuete* is used to colour many cheddar cheeses and Gloucester cheese, and it is responsible for the signature colour of Leicester Red.[18]

Achuete in the Philippines

By the end of the sixteenth century the Spanish empire had access to achuete plantations across the Americas. Once transplanted to the Philippines, the plant readily took to the tropical climate and was easily propagated, so it was available and accessible for daily local use. *Achuete* would not have been a logical choice for Philippine export, however; valuable cargo space on the galleons headed back toward Nueva España and Europe would be reserved for the much more expensive silks, beeswax, gold, balsam, and spices found exclusively in the Pacific islands.[19] The Philippines' role within the Spanish Empire was generally as the international trade hub rather than a spice source, and the few well-known attempts at cultivation efforts were thwarted by lack of local leadership, communication, and funding, as in the case of the 18th-century commercial cinnamon failure in Mindanao.[20] Indeed, *achuete* was observed in 1628 being exported from Nueva España to China, where it was valued 'very well for dying silk and other purposes'.[21] This suggests that while the tree was introduced to the Philippines, the Spanish Americas remained the main source for exporting *achuete* to the rest of the world, including Asia.

As a medicine, *achuete* was included in one of the Philippines' earliest surviving botanical works, *Libro de Medicinas de Esta Tierra,* written by the Augustinian Ignacio Mercado between 1660s and 1680s. Called the first Filipino-born botanist, Mercado was born in 1648 to a Spanish father and a Filipino mother. His manuscript was written in Spanish and intended as a practical manual or written instruction for the use of other missionaries, focused on locally available plants to treat both the Spanish and the various *indios* living in the Philippines.[22] This is in contrast with the wider *relaciones* ethnographic accounts, usually by Spanish officials, and academic-oriented works, such as the first flora of the Philippines, *Herbarium aliarumque Stirpium in Insula Luzone Philippinarum,* written in Latin by Jesuit Josef Georg Kamel and published in 1704 as an appendix to the famous *Historia Plantarum* of English physician John Ray.[23] While Mercado was a self-taught botanist, however, he had access to the major botanical works that shaped the early modern European medical tradition including Laguna's recent translation of Dioscorides, which he cites, as well as the well-known European accounts of New World plants from the sixteenth to seventeenth centuries, such as those of Carolus Clusius and Francisco Hernández.[24]

This influence is evident in Mercado's description for *achuete*:

> It is cold in the third degree, and has some astringency [...] it severely quenches thirst and burning fever, and it is useful for fevers, caused by heat, and it dissolves

> growths and swellings. Hence, it can and should be used, with very good success [...] in drinks and syrups, and in delicacies when it is intended to cool and refresh. Add achiote to cocoa for hot tooth aches: it clenches and fortifies teeth, quenches thirst, and is good for the poor instead of saffron [...] [it] comforts the stomach, increases milk and restricts the chambers. Mixed with resin, it cures the scabies, and other sores. Poured into cocoa, it makes it possible to drink more than usual, without harm or damage to health because it helps digestion and never causes disgust.[25]

Hernandez' *Historia Natural de Nueva España* was based on his work between 1570 and 1577 in the first Spanish scientific expedition to survey the peoples, customs, and natural resources found in Nueva España. His description for medical uses of *achuete* follow:

> [It is] cold in the third degree and with some dryness and astringency [...] it calms the burning of fevers, relieves dysentery and makes tumours disappear, for which reason it can be conveniently mixed with [...] any [cool] foods or medications. It is added to *cacáoatl* as a refresher and to enhance its colour and flavour. It removes tooth pain caused by heat, and strengthens them; it causes urine, quenches thirst, and among certain people acts as saffron [...] mixed with resin it cures scabies and ulcers; strengthens the stomach, stops the flow of the belly, and increases [breast] milk. Mixed with cacáoatl shells, makes it harmless whatever the amount in which it is taken, as it is usually digested with its help without any discomfort. [26]

Variations of Hernández' descriptions were widely used in other botanical works. Robert Lovell in Oxford, for instance, published a nearly identical description in 1665 in English, though his source was not mentioned:

> It's cold third degree and somewhat dry and binding. The seed drunk helps the heat of feavers, and dysenteries, and applied repelleth tumours, and is mixed with remedies for the like purposes. It helpeth the toothache of a hot cause, it corroborareth, and evacuates urine, it helpeth thirst, and is used in stead of saffron. The gaines being boiled in water, and mixed with [resin] it helps the scab and ulcers: it corroborates the stomack, stops the belly, and causeth milke.[27]

Description parallels found between these and other works from this period demonstrate how the circulation of medical knowledge of 'New World' plants directly influenced the works of scientists and missionaries who had an interest or were sent to Nueva España and the Philippines themselves.[28]

While *achuete* was first introduced as a medicine, it was as a food colouring substitute for saffron that gave *achuete* a continuing role in Filipino culture that continues today. The Franciscan missionary Fernando de Santa Maria, operating in the Philippines between 1730

and 1768, wrote *Manual de Medicinas Caseras,* a missionary manual with the explicit intention of assisting 'pobre Indios' in places where 'no hay médicos ni botica'.[29] First published in 1768, Santa Maria's *Medicinas Caseras* groups *achuete* as one of four *azafrins* (saffrons): saffron (from stigma and styles), turmeric (from a root), *achuete* (from seed pods), and safflower (from flower petals). These three otherwise notably different spices were interchangeable to a certain extent and used for the same purposes as saffron. While reference to saffron had been mentioned in previous descriptions for *achuete*, we see that here its basis as a spice has shifted from its place in the European pharmacopoeia, towards its association with a particular pigment.

Santa Maria's manual provides us with written documentation of the role *achuete* had as a food colouring in the later colonial period. It was reprinted at least five times from 1768 and 1886, indicating it had lasting influence. Today, as we find *achuete* in many cherished Filipino foods including 'fiesta dishes' like *kare-kare* (peanut-based oxtail stew), *pancit palabok, pancit luglug,* and *pancit malabon* (rice noodle dish variations), and comfort foods like chicken *inasal* (basted chicken), *adobong pula* (red adobo), and the Chinese-inspired sweet-sour chicken.[30]

Case Study 2: Dysphania ambrosioides (L.) Mosyakin and Clemants 'Epazote' or 'Apasote'

Our second case study is the herb *apasote*. It is a common plant in its native Mexico, where it is known as *epazote,* used as a culinary herb in corn stews and fried beans dishes. When crushed, its leaves give a distinctive aroma that some have described as akin to gasoline; the name 'epazote' is said to derive from the Nahuatl word *epatl* for skunk. The flavourful leaves serve a double function in bean dishes, believed to reduce stomach gas, and it has long been known among Native peoples of the Americas to be an effective vermifuge.

Accidental Weed or Medical Supply?

Apasote has been considered either an accidental introduction to the Philippines or an intentional one for medicinal purposes and a subsequent escape into the wild.[31] It is known to easily disperse and become an invasive species in many places where it is found, growing along roadsides and rocky areas as a weed.[32] Whether the transfer to the Philippines was intentional or accidental, *apasote* was identified and included in early works on Philippine flora, as the European-trained missionaries would have been familiar with it from studying 'New World' plants and medicines in works like those of Francisco Hernández. [33]

The earliest European record we have of apasote is from Hernández, also from his Historia Natural:

> It is a herb with branched roots, from where stems of a long elbow with oblong, crenelated and reddish leaves, and seed with spikes. It is pungent, odorous, and calorific in the third degree; It is eaten raw or cooked, and added to meals

> strengthens, relieves asthmatics and breast sufferers, and provides pleasant food. The decoction of roots contains dysentery, removes inflammations and [expels harmful worms] from one's stomach. It grows in warm or temperate regions, and is cultivated in the orchards of the same or others because of its usefulness.[34]

In the Philippines, *apasote* was documented by Mercado, who again drew from Hernández with a near-identical description as the one above. However, he included another use based, he claimed, on personal observation: an infusion of its seeds in wine 'dulls the senses in such a way that those who are flogged do not feel the lashes and those put in torment do not feel it'.[35] Manuel Blanco, in his landmark *Flora de Filipinas* (1837), repeated Mercado's use as an anaesthetic and wrote 'this is what has been written in the Islands', supporting the claim that this was not an imported use for an imported plant, but something new based on experience in the Philippines.[36] Pardo de Tavera also copied Mercado's description in his *Plantas Medicinales de Filipinas* (1899) and commented, 'these properties, if true, make this plant one of the most useful in the Philippines.'

Adapted Dishes, New Uses in Philippine Food

Today, *apasote* dot not appear to be known as a medicine, much less an anaesthetic, likely due to concerns of its toxicity. It is, however, still used in regional cuisine. The Filipino Ilocano dish *pipian* was adapted from the Mexican dish of the same name and calls for both *apasote* and *achuete*. Filipino chefs Amy Besa and Romy Dorotan, who own restaurants celebrating Filipino food both in New York and in the Philippines, write that 'in Mexico, *pipian* is a sauce thickened with ground toasted *pepitas* (pumpkin seeds); in the Philippines, ground toasted rice is used instead [...] the main flavoring agent is the *apasote*, called *pasotes* in Ilocos'.[37] Besa and Dorotan note that *apasote* is only found in Ilocos Sur. Betty Ann Besa-Quirino, Filipino American cookbook author, food writer, and journalist, also writes that the plant is only found in Vigan, the capital region of Ilocos, and suggests combining oregano and cilantro to substitute for *apasote*.[38] The plant is, however, also known in another part of the Philippines for a use not written about in the missionary manuals. In the Visayan region of Cebu, *apasote* is apparently the secret ingredient in what Anthony Bourdain called 'the finest pig' and 'the best of the best': Cebu lechón, a roasted pig fiesta dish in the Philippines that has many varieties across the islands, sometimes stuffed with various herbs local to the area.[39] *Apasote* is the herb used to stuff the Car-car Cebu version of this dish, which remains as popular as ever.

Taxonomic Changes and Vernacular Names

Tracing plant uses across contexts is often complicated by taxonomic classification, which is based on both morphological and phylogenetic features and may or may not reflect how

plants are grouped with others as traditional foods and medicines. In the case of *apasote,* cultural distinctions between plants have been reported based on morphology, specifically colour; among Zapotec, for example, *bitia morad*, purple-stemmed *apasote*, and *bitia nol*, which has white stems, are reportedly somewhat interchangeable and used when cooking beans, whereas young leaves of the green *bitia z* should be used exclusively in corn stews.[40] Taxonomically, the species was previously a member of the *Chenopodium* genus until it and several other species were moved to the Australian genus *Dysphania* following phylogenetic studies in the 2000s. In testing, the essential oil of *D. ambrosioides* var. *ambrosioides* was found to be much lower in ascaridole, and thus less toxic, than *D. ambrosioides* var. *antihelminticum*.[41]

This taxonomic change is problematic for traditional uses and names of the plant, especially for those studying use-histories. In the Tarahumaras people of Chihuahua, Mexico, for example, it is one of three plants with similar uses, called *chuá*; the other two plants are *Chenopodium album* and *C. graveolens*, which are also used like spinach among indigenous groups of North America but have other uses for medicine and in rituals, and possess different chemical constituents from *D. ambrosioides.*[42]

Common names can also cause confusion when citing uses from historical botanical literature. Several plants unrelated to *apasote* share the name 'Mexican tea', such as members of the *Ephedra* genus, which have a long history of use in Chinese medicine and are of pharmacological interest.[43] Another name for *apasote*, 'wormseed', has been applied to various plants with perceived vermifugal properties, such as those of the genus *Artemisia*; and the name for *apasote*, 'Jesuits tea', is perhaps most known in the context of mate, the caffeinated drink made from *Ilex paraguariensis,* a member of the holly family.

Conclusion

The cases of *achuete* and *apasote* demonstrate the nonlinear journeys across and beyond the food-medicine interface that spice plants, and any useful plant, can take as they are introduced into a new environment. Especially in the colonial context, intentional botanical introductions often come with existing use-knowledge attached which are enforced in the new cultural landscape, and over time continued, rejected, forgotten, or transformed into new uses. *Achuete* was used for centuries in food, medicine, and as a pigment source before the European expansion. It traversed all three of these spheres as it was introduced to Europe in the sixteenth century and traded as a pigment, inserted into the Philippines for medical reasons, and found a permanent place as a food colouring. Similarly, *apasote* was recognized early on by European missionaries in the Philippines and entered into written tradition as a medicine and leafy vegetable. Eventually, both these uses fell out of practice, and today, you may only know it as a regional herb for a traditional Ilocano dish and in a tasty, tourist-attracting Cebuano roasted pig.

Last year marked the 250th commemoration of James Cook's landing in New Zealand, and 2021 will mark the 500th commemoration of Ferdinand Magellan's landing in the Philippines. Both voyages were significant milestones in botanical exploration, and both had profound effects on the peoples of Asia and the Pacific world that altered their courses forever.

While we confront the detrimental history of colonialism and reflect on the impact non-native plants cause on new environments, may we also find ways to celebrate the healing and nurturing power of foods that bind our world together.

Notes

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