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The arrival of American plants in the Philippines: ecological colonialism in the sixteenth-to-eighteenth centuries

Paulina Machuca*

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Resumo

Este artigo aborda o fenómeno da introdução de plantas americanas nas Filipinas entre os séculos XVI e XVIII, isto é, durante a época do comércio transpacífico entre a Nova Espanha e o arquipélago asiático através do Galeão de Manila. Dois tópicos sobressaem neste trabalho: em primeiro lugar, o facto de o trasplante de vegetais da América para a Ásia se ter devido mais a motivações individuais do que a uma política da Coroa espanhola e, em segundo lugar, são analisadas as plantas de origem americana mais importantes nas Filipinas.

Palavras-chave: agricultura, ecologia, Filipinas, Nova Espanha, plantas.

Abstract

This paper discusses the phenomenon of the introduction of American plants in the Philippines between the sixteenth and eighteenth centuries, during the time of transpacific trade between the New Spain and this Asian archipelago through the Manila Galleon. Two topics excel in this paper: first, that transplanting plants from America to Asia was due more to individual motivations to a deliberate policy of the Spanish Crown, and secondly, the most important plants of an American origin in Philippines are analyzed.

Keywords: agriculture, ecology, Philippines, New Spain, plants.

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Introduction

The arrival of American plants on the Philippine islands during the epoch when the Manila Galleon was traversing the Pacific Ocean, from 1565 to 1815, brought transcendental changes to the cultural practices of the inhabitants of that archipelago, changes that took the form of a gradual process that would conclude early in the nineteenth century when the trans-Pacific trade route between Acapulco and Manila was interrupted. But by that time the most important plants of American origin had been introduced there and become acclimatized. What plants were involved, and what do we know about their introduction into the islands? These are questions this article seeks to answer.

Our search led us to documents in the *Archivo General de Indias* (Seville, Spain), works published during the period of Spanish occupation, especially the *Flora de Filipinas* by Father Manuel Blanco, and more recent literature dealing with aspects of this topic. It should be noted that historical references as to when, and under what circumstances, these plants were transplanted in the archipelago are scarce; however, indirect references help reconstruct the corpus of study.

The article contains two parts: first, we suggest that this phenomenon was, above all, a form of mediated "ecological colonization;" that is, an experience derived from the colonial dynamics imposed by the Spanish who after occupying territories in America colonized the Philippine archipelago with the resulting circulation of natural, social and cultural elements.[1] Also, we argue that the transplantation of these vegetables from America to Asia was not a deliberate policy pursued by the Spanish Crown—at least not before the eighteenth century Bourbon reforms—but was spurred by the motivations of individuals seeking to satisfy personal interests. Once the plants were introduced, different social groups in the Philippines, whose principal characteristic was their agrarian livelihood, perceived the utility of incorporating some into their alimentary systems.

1 I return to this concept below.

The second section analyzes a list of the American plants that gained importance in the Philippines, classified as follows: cereals, starches, legumes, vegetables, fruits, medicinal, stimulants, spices, textiles and ornamentals; insofar as possible, we also examine the process of transculturation they underwent.

The "ecological colonization" of the Philippine archipelago

The title of this section requires clarification: our use of the concept "ecological colonization" alludes to the idea of "ecological imperialism" developed by Alfred W. Crosby. Broadly-speaking, this perspective holds that the Spanish conquest of America was accompanied by a gradual, but deliberate, process of introducing plants and animals of European origin that from the early sixteenth century facilitated the transfer of Western practices to the occupied lands; in short, the Europeanization of the conquered territories. This justifies using the concept of "ecological imperialism"[2] to refer to a process based on Viceregal policies designed to transfer the so-called Mediterranean triad—wheat, grapes and olives—to New Spain, together with a host of fruit trees and vegetables of peninsular origin.[3]

The case of Spanish colonization in the Philippines was distinct: first, the Crown did not seek to implement a European agroalimentary system as in New Spain; rather, it strove to exploit the natural resources found in Southeast Asia, including several species it coveted. Chronicles by authorities and missionaries in the archipelago and adjacent islands devote many pages to reporting the region's enormous vegetable richness and the benefits that growing spices—though few were actually found in the Philippines—would bring to the Empire. Some proposed projects to transplant Filipino spices in Spain's American possessions to save the Crown the economic and human costs of shipping them from Asia to Europe. One such man was Juan Bautista Román, *factor* and *veedor* of the Royal Treasury (*Real Hacienda*) of the Philippines who, in a letter addressed to the monarch on June 22, 1584, suggested transplanting Asian pepper in America,

> a most easy and convenient remedy, taking a plant [pepper] similar to ivy to the West Indies, warm provinces [as they are] of the same temper as the areas where it grows here [...] it would bring great benefits and increase Your

2 Alfred W. Crosby, Jr., *The Columbian Exchange. Biological and Cultural Consequences of 1492*, Connecticut, Greenwood Press, 1972.

3 For more on this topic, see Paulina Machuca, "El arribo de plantas a las Indias Occidentales: el caso del Balsas-Jalisco a través de las Relaciones geográficas del siglo xvi," *Relaciones. Estudios de Historia y Sociedad*, Vol. XXXIV, no. 136, 2013, pp. 73–114.

> Majesty's treasury, for it would ratify conserving the West Indies by adding this cultivar [...] with this and other spices Your Majesty would combine exploitation in India with that of the West Indies, thus reducing the expenses incurred in ships (Naos) of ordinary fleets [...] also, the Indies are closer to European routes and would entail little or no cost to carry pepper to Spain, especially from the islands called Barlovento, where it could be planted like the ginger that Guido de Lavezares took, and is now more abundant in La Española than in areas where it originated.[4]

In this letter, Román argues strongly that fostering cultivation of Asian plants in the American colonies was in the Crown's best interest due to their proximity to Europe and because Atlantic trade was not subject to the same difficulties and perils that plagued the Trans-pacific route served by the Galleon of Manila. In his missive, the good *factor* offered to undertake the transfer of pepper to America himself:

> I know where it is brought to the Philippines from Patán, which has the best pepper [...] it is an island whence a few days before some hired Indians brought it, not to sell their harvest, but out of curiosity, and, God willing, I think I could store it in Manila awaiting Your Majesty's decision.[5]

Roman's dynamic, prospective, open, entrepreneurial spirit was nothing new. In a sense it echoed Guido de Lavezares' model—which he cites—the man credited with introducing ginger to America. The letter he sent from Cebu (on June 5, 1569) states that he shipped tamarind trees (*Tamarindus indica*) and ginger root (*Zingiber officinale*) on the boat *San Juan* that left Cebu in July 1567 for Acapulco, "to be planted in the most fertile provinces of New Spain [...] I send in this ship some pepper seedlings for this same purpose."[6] From early times, then, we know that there was great interest in two highly -prized spices of that period: cinnamon and ginger. Lavezares and Román

4 "Un remedio harto fácil y conveniente, como es llevar la planta [pimienta] que es como yedra a las Indias Occidentales, a las provincias cálidas y son del mismo temple que las partes donde por acá se coge, de lo cual resultarían muchos bienes y aumentos de la hacienda de V.M., porque sería ratificar la conservación de las Indias Occidentales habiendo en ella esta granjería más [...] y con ésta y la demás especiería juntaría V.M., el aprovechamiento de la India con el de las Indias de Occidente, reduciendo el gasto que ahora se tiene con las naos, a solo más flotas ordinarias, [a]demás de que las Indias son más cercanas a la navegación a Europa y tendría poca o ninguna costa en conducirse la pimienta a España, especialmente desde las islas que llaman de Barlovento, donde se podría plantar como se plantó el jengibre que llevó Guido de Lavezares de que ahora hay en La Española más abundancia que en otras partes donde ello tuvo origen." (ARCHIVO GENERAL DE INDIAS [AGI], *Filipinas*, 29, no. 48.)

5 "Yo sé a dónde la hay en las Filipinas traída de Patán, que es la mejor pimienta de todas y es en una isla donde ha pocos días que unos indios contratadores la trajeron no para valerse de la cosecha, sino por su curiosidad, y si Dios fuere servido la pienso yo tener y guardar en Manila hasta ver lo que V.M. manda." (AGI, *Filipinas*, 29, no. 48.)

6 AGI, *Filipinas*, 29, no. 9. fls. 29r–30v.

may have been acquainted, so the former's project germinated in Román's mind 15 years later. Unfortunately, the documents consulted do not indicate if their enterprises prospered or failed, though that silence in itself leads us to suspect the latter.

Another factor that impeded cultivating plants of Mediterranean origin in the Philippines was certainly the particular climactic characteristics—high heat and humidity—that prevailed on most islands, making it impossible to raise grapes and olives, or fruit trees like apple or pear. Nor can we forget that the Philippines colony, in contrast to New Spain, had no large European population capable of promoting the cultivation of foods of European origin. Of course there were isolated cases, like that of Luis de Pineda Matienzo de Nevares, who in 1654 boasted that he was the first to sow wheat in the province of Laguna de Bay, east of Manila, a jurisdiction where he served as army captain and mayor (*alcalde mayor*).[7] The reason for planting wheat was not just to produce food, but also to satisfy the demand for communion wafers (*hostias*) in the religious sector, and provide stores of biscuit for the seaman sailing on the Galleon, for if they were scarce the replacement was mouthfuls of rice. According to de Pineda, wheat soon became plentiful on the islands, though we do not know what happened later when documents show that most of the wheat consumed there was imported. In this regard, the Jesuit Francisco Colín wrote in his *Labor evangélica* (1663) that "wheat comes from China, and flour from India and Japan, when trade is regular; so bread is normally available."[8]

It seems, then, that during the two first centuries of Spanish presence in the Philippines there was no policy of fostering foreign cultivars, so it would be incorrect to speak of a process of Europeanization. However, we can certainly identify an americanization of plants in the archipelago; a gradual, silent process that began in the second half of the sixteenth century and that, thanks to the Galleon of Manila, continued into the early nineteenth century.

By whom, and via what mechanisms, were American plants successfully introduced and adapted to the Philippines? Without doubt, we must look at the private motivations of monks in their orchards and haciendas, of soldiers nd sailors, including Spanish peninsulars, Creoles and mestizos, and of the authorities who passed through, or resided in, New Spain, and had the curio-

7 AGI, *Filipinas,* 193, no. 20.

8 Francisco Colín, *Labor evangélica, ministerios apostólicos de los obreros de la Compañía de Jesús, fundación y progresos de su provincia en las Islas Filipinas*, Madrid, Imprenta de Joseph Fernández de Buendía, 1663, p. 49.

sity to include plants deemed important in those dominions on the Galleon of Manila. Seen from this perspective, we can identify the process as one of mediated "ecological colonialism" that spread from one colony to the next. This was neither coercive nor deliberate, and emerged not through imperial policy but the dynamics of colonization itself. Indeed, one of the key features of ecological colonialism is that it is discretional. Unfortunately, this makes it very difficult to document the arrival of each American plant to the Philippines.

In the case of cacao, for example, the Augustinian chronicler Gaspar de San Agustín states in his *Conquista de Filipinas* that the sea captain Pedro Bravo Lagunas brought it to the archipelago from Acapulco in a flowerpot around 1670 and, upon disembarking in Luzon, delivered it to his brother, Bartolomé Bravo—then the *beneficiado de Camarines*. San Agustín narrates that an Indian from Lipa named D. Juan del Águila stole a cacao plant, "that he hid and grew; that sprout of cacao was the origin of the abundance of this noble fruit in these islands."[9] He further relates that in 1674, while serving as priest in Lipa (Batangas), Father Ignacio Mercado gave cacao seeds to many people. Be it truth or myth, this is one of very few references to the introduction of American plants in the early years of Spanish colonization.

But we have no way of knowing how many Guido de Lavezaris or Pedro Bravos might have existed in the three centuries of our study. Clearly, individuals with a deep sense of the importance of these plants, and of the transcendence of transplanting vegetable species from different continents must have existed, but as long as the documents guard silence it will be difficult to elucidate this process in detail. It was not until the second half of the eighteenth century, the period of the Bourbon reforms, that cultivation of American plants like cacao, tobacco and indigo, became more systematized in concrete institutional projects designed to reactivate an economy based on the archipelago's natural resources. This coincided with the arrival of Governor José Vasco y Vargas in 1777, and the creation of the *Sociedad Económica de Manila* in 1781.[10]

9 Cited in Fr. Manuel Blanco, *Flora de Filipinas. Según el Sistema sexual de Linneo*, Manila, Imprenta de Santo Tomás, 1837, pp. 601–2.

10 Also in the late eighteenth century, Spain sent several naturalists to its American colonies and the Philippines on diverse scientific expeditions that focused attention on local Filipino flora. On this topic, see studies by Susana Pinar, *El sueño de las especias. Viaje de exploración de Francisco Noroña por las islas de Filipinas, Java, Mauricio y Madagascar*, Madrid, CSIC, 2000, pp. 13–32; and, *El explorador del Índico: Diario de viaje de Francisco de Noroña*, Madrid, CSIC, 2009, pp. 51–75.

The Philippines: an agrarian society

Once unloaded, American plants had to be acclimatized to, and cultivated in, the different provinces where they arrived. Family gardens in Indian villages and the haciendas of religious orders became the niches where plants brought from America on the Galleon were planted and nurtured; where the process of social adaptation took place. In the case of family gardens, people needed only obtain seeds of American fruit trees, for once planted they grew quickly. In the case of haciendas, the role of clerics in cultivating tropical plants from America, especially New Spain, cannot be underestimated.

One of the key factors that propitiated the rapid adaptation of American plants was the agrarian base of Filipino society. Several early colonial sources point in this direction, and we know that all social groups in Luzon, Bisayas and Mindanao practiced agriculture in more or less similar ways, centering on rice cultivation. Thus, in his work on the Bisayan Indians (1668), Father Francisco Ignacio Alzina expressed the following:

> This obligation and necessary force made and makes these Bisayan natives generally farmers; so we may say that all of them, universally, from the eldest to the youngest, from principals to slaves, and even women, except the very highest principals who have slaves or did so in ancient times, are devoted to farming their fields and the repetitive tasks of gathering the harvests necessary for their sustenance, and tribute.[11]

Far from leading to the disappearance of this agrarian base, the imposition of the Spanish colonial system in the second half of the sixteenth century actually consolidated it by implementing policies that congregated towns as a means to ensure supplies of staple foods for natives and newcomers alike, and to produce surpluses. According to O. D. Corpuz, this new modality entailed restructuring ancient *barangays* that housed 30-to-50 families in new colonial towns with as many as 500 families, each assigned a plot to cultivate: "The pueblos in turn became viable through the institution of a land system based on sedentary agriculture."[12] A second land tenure system was the hacienda, usually in the hands of clerics from different orders, including Augustinians,

11 "Esta necesidad forzosa y esta fuerza necesaria hizo y hace a estos naturales bisayas generalmente abradores; y así podemos decir de ellos que todos universalmente desde el mayor al menor, desde el principal al esclavo, y aun hasta las mujeres todas, excepto las muy principales que tienen esclavos o tenían en su antigüedad, se ocupan en el cultivo de los campos y en el repetido afán de untar las mieses necesarias para su sustento, y para su tributo" (Victoria Yepes, *Una etnografía de los indios bisayas del Padre Alzina*, Madrid, CSIC, 1996, p. 30.)

12 Corpuz, O. D., "Land and agriculture in the Philippines: an economic history perspective," *Philippine Review of Economics and Business*, Vol. XXIX, no. 2, Dec. 1992, pp. 137–60.

Dominicans, Jesuits and *Recoletos*, who possessed broad extensions of land that were farmed by natives.

In the early seventeenth century, a mix of Asian and American fruit trees in the yards of Filipino families was a reality. For example, when describing the island of Luzon in 1604, Gabriel de San Antonio wrote that it, "has many fruits, the best are: guava, pineapple, banana, *lamboyes*, *piles*, *paos* (that the Portuguese call *mangas*), *mobolos*, chili peppers, *tampetes*, some *anonas* and much sugarcane."[13] Guava, pineapples, *anonas* and chili peppers are of American origin, so the fact that they headed San Antonio's description merits special attention. Later, Antonio de Morga mentioned in the *Sucesos de las islas Filipinas* (printed in Mexico in 1609) that the natives of Cagayán on Luzon: "Also eat cooked yams, similar to sweet potatoes, beans, quelites and other vegetables, all manner of bananas, guava, pineapple, *anonas*, oranges in many forms and other kinds of fruits and vegetables that abound on the land."[14]

Morga later added sweet potatoes and quelites—from the Náhuatl *quilitl*—though we cannot know for sure whether he referred to the species *Amaranthus hybridus* or only used the generic name of an herb that grew wild in the archipelago.

The most important American plants in the Philippines

As mentioned above, the gradual process of introducing American plants into the Philippines began in the second half of the sixteenth century with the opening of the trans-Pacific sea route traversed by the Galleon of Manila. Data on what plants were taken to which specific region of the archipelago are scarce, but we can identify those that were present in the early seventeenth century. Figure 1 presents 30 plants of American origin that became established in the Philippines, many preserving their Náhuatl names, though with variants. We can identify at least 11 groups: cereals, starches, legumes, vegetables, fruit trees, medicinal, stimulants, spices, textiles, dyes, and ornamentals. Clearly, most are edible plants, but many also had medicinal applications. Especially interesting is the sector of dyes, for they were highly-valued in a society that produced textiles made of *abacá*, cotton, silk, and, later, pineapple.

13 Gabriel de San Antonio, "Breve y verdadera relación de los sucesos del reino de Camboya" in Gabriel de San Antonio and Rodrigo de Vivero, *Relaciones de la Camboya y el Japón*, Roberto Ferrando (ed.), Madrid, *Historia 16*, 1988, Colección Crónicas de América 46, p. 82.

14 Antonio de Morga, *Sucesos de las islas Filipinas*, Francisca Perujo (ed.), Mexico, Fondo de Cultura Económica, 2007, pp. 224–5.

Common name in Mexico	Common name in the Philippines	Scientific name	Observations
Achiote	Atsuete; achuete	*Bixa Orellana*	Edible, Dye
Agave, maguey	Maguey	*Agave spp.*	Medicinal, utensil
Añil	Añil	*Indigofera anil*	Dye
Arbusto of the tiña	Akapulko	*Cassia alata; Senna alata*	Medicinal, ornamental
Cacahuate	Mani	*Arachis hypogaea*	Edible
Cacao	Cacao, kakaw	*Theobroma cacao*	Edible, stimulant
Calabaza	Kalabasa	*Cucurbita spp.*	Edible
Camote	Kamote	*Ipomea batatas*	Edible
Capulín	Aratiles	*Muntingia calabura*	Edible
Chayote	Sayote	*Sechium edule*	Edible
Chicozapote	Tsiko	*Achras sapota*	Edible
Chile	Sili	*Capsicum spp.*	Edible, dye
Chirimoya	Atis	*Annona squamosa*	Edible
Chochopali	Cosmos	*Cosmus sulphureus*	Ornamental
Ciruela	Sinigwela	*Spondias purpurea*	Edible
Frijol	Patani	*Phaseolus lunatus*	Edible
Guamúchil	Kamatsile	*Pithecellobium dulce*	Edible
Guayaba	Bayabas	*Psidium guajava*	Edible
Guanábana	Guayabano	*Anona muricata*	Edible
Corn	Mais	*Zea mays*	Edible
Mandioca	Kamoteng kahoy	*Manihot esculenta*	Edible
Maravilla	A las cuatro	*Mirabilis jalapa*	Ornamental
Palo of the Brasil	Palo colorado	*Caesalpinia echinata*	Dye
Papa	Potato	*Solanum tuberosum*	Edible
Papaya	Papaya	*Carica papaya*	Edible, medicinal
Piña	Piña	*Ananas comosus*	Edible, textil
Sacalasúchil	Kalatsutsi; calachuchi	*Plumeria rubra*	Ornamental
Tobacco	Tabako	*Nicotiana tabacum*	Stimulant, medicinal
Tomate	Kamatis	*Solanum lycopersicum*	Edible, dye
Zapote negro	Zapote negro	*Diospyros digyna*	Edible

1 American plants in the Philippines, sixteenth–to–eighteenth centuries

Cereals

It is well-known that three cereals have played fundamental roles in the history of humankind: wheat, corn and rice. Efforts to establish the first, the European grain *par excellence*, in the New World after the Spanish conquest were somewhat successful. While it never displaced corn in Mesoamerica or the Andes, in some provinces of New Spain, like Michoacán, it became a

staple that complemented corn in times of scarcity. In fact, in the decade of 1570 some towns paid tribute with wheat instead of corn.[15]

There were attempts to reproduce this complementarity among staple foods of distinct origin in the Philippines, with corn accompanying rice, but the latter, which had constituted Asia's alimentary base for various millennia, remained the principal source of nutrition in the archipelago. According to information from Father Alzina, around 1604 in the Bisayas region, natives grew corn to complement rice, planting it together with millet (*Panicum miliaceum*) around rice fields because they matured more quickly and, probably, had greater yields.[16] The chronicler Gaspar de San Agustín states in his *Conquistas de las islas Filipinas* that "corn from America has been a great remedy for replacing rice when scarce [...] for it is easy to grow and bears much fruit."[17]

Corn is mentioned in early projects, though these were not always successful. Around the 1630s it was proposed that the *Colegio y Hospital de Niños Huérfanos de Manila* ("College and Hospital for Orphan Children of Manila") produce rice wine and corn liquor for sale to the Sangleys of the Parián, but the initiative did not prosper. In this regard, it is important to note that the Royal Decree (*real cédula*) of January 25, 1631 authorized the *Colegio* to purchase 20 ovens to produce rice wine and corn liquor for the Chinese,[18] but the governor of the Philippines, Sebastián Hurtado de Corcuera, opposed the resolution, suggesting instead that a perpetual *encomienda* be established to sustain those orphans.[19]

It is not clear where the idea of producing corn liquor emerged, but clearly this would have required: (i) at least one person with knowledge of how to elaborate the drink, perhaps having learned in New Spain or Peru; and, (ii) sufficient corn supplies in the Philippines to provide raw material. We do know that by at least the nineteenth century some islands in Bisayas were producing an alcoholic drink called *pangasi*, made from corn.[20]

Beyond these references, so limited in temporal and spatial terms, we cannot probe more deeply into the history of corn in the Philippines. However, current ethnographic research there reveals that it was not only success-

15 P. Machuca, art. cit., p. 80.

16 V. Yepes, op. cit., p. 34.

17 Cited in José Elías (Fr. Anselm) M. Manalastas, OSB, "Maize: Mexico's gift to the Filipinos," paper presented in the Seminario Internacional Año de la Fraternidad México-Filipinas, Guadalajara, Jalisco, Mexico, 27–28 Nov. 2014.

18 AGI, *Filipinas*, 42, no. 1.

19 AGI, *Filipinas*, 85, no. 94.

20 J. P. Sanger (dir.), C*ensus of the Philippine Islands. Taken under the Direction of the Philippine Commission in the Year 1903*, Vol. IV, Washington, The United States Bureau of the Census, 1905, p. 154.

fully incorporated into local diets, but was modified, transformed and consumed in ways never seen in America: eg. *binatóg*, *mais con ielo*, *cornick* and *chichacorn*, a series of corn-based snacks eaten in many areas of the archipelago.[21] Finally, the typical corn tamal of the Mesoamerican diet—from the Náhuatl *tamalli*—was converted into a local version made with rice.

Starchy tubers

Starchy roots include vegetable species distinct from cereals. Obviously, they provide starch for human consumption, and are rich in sugars.[22] Some, like taro or *gabi* (*Colocasia* sp.), have long been consumed in Southeast Asia and the Western Pacific, and throughout Filipino history have been of enormous importance as an alimentary resource in local communities.[23] Later, three traditional tubers from Mesoamerica, the Andes and Amazonas arrived to complement those plants: the sweet potato (*Ipomea batatas*), the potato (*Solanum tuberosum*), and manioc (*Manihot esculenta*). Soon, they competed with taro to become the staple food for island populations.

We have some clues as to the time of the arrival of sweet potatoes in the archipelago, for in June 1582 Miguel de Luarca wrote in his *Tratado de las islas Filipinas* that the island of Cebu had "some sweet potato roots from Santo Domingo which on these and other islands are called *camote.*"[24] The central region of Bisayas may have been a nodal point in the diffusion of sweet potatoes because this source relates that in the late sixteenth century one island near Cebu was christened "the Island of *Camotes*":

> Near the eastern part of the island of Cebu there are two small isles with a circumference of some five leagues [...] called *isletas de Camotes*. Between them they have some three hundred Indians, originally from the city of Cebu [...] poor people though they have some wax, much fish [and live] in small villages of seven or eight houses, separated from the island of Cebu by three leagues and seven from the city.[25]

21 M. Manalastas, op. cit.

22 Lisa Garnier, *La agricultura: de lo tradicional a los transgénicos*, Baume-les-Dames, Larousse, 2004, p. 42.

23 P. J. Matthews et al., "Irrigated taro (*Colocasia esculenta*) in the Indo-Pacific," *Senri Ethnological Studies*, 78, 2012, pp. 307–40.

24 "Y por la parte del este de la isla de Cebú están dos isletas pequeñas que ternan de box cinco leguas que llaman isletas de camotes. Ternan entrambas como trescientos indios. Son propios de la ciudad de Cebú. Es gente pobre aunque tienen alguna cera, mucho pescado, son las poblaciones pequeñas de siete y a ocho casas. Están apartadas de la isla de Cebú como tres leguas y siete de la ciudad." (AGI, *Patronato*, 23, r. 9, fl. 2.)

25 AGI, *Patronato*, 23, r. 9, fl. 3.

The sweet potato had arrived in some areas of continental Asia and other islands by at least the first half of the sixteenth century with the Portuguese surely playing a key role. Its presence was recorded in Yunnan province, China, around 1560, perhaps having found its way there through the commercial networks of Portuguese sailors with India and Burma.[26] In contrast, manioc, widely consumed by Amazonian societies at the time of European contact with the Americas, may have developed more in regions of Africa and Asia that were under Portuguese dominion. In the Congo and Angola, for example, it arrived early in the sixteenth century and then spread to Central Africa, arriving eventually in São Tomé and Príncipe. Russell-Wood maintains that manioc did not make the turn around the Cape of Good Hope until much later, not arriving in India or the Malabar Coast until early colonial times.[27] If this is the case, it would mean that the arrival of manioc in the Philippines (where it is called *kamoteng kahoy*, or cassava) over that route occurred long after the sweet potato, which would explain why the latter became so important in the Filipino alimentary system, especially in Bisayas. Today, the area of greatest manioc consumption is the Muslim region of Mindanao, though cassava cake (*bibingkang kamoteng kahoy*) and cassava *sumang* are considered traditional Filipino dishes.

Legumes

The legumes, that characteristically produce fruit in the form of seedpods, have high nutritive value and are rich in sugars and proteins. Beans (*Phaseolus*) were quickly included among staple foods in the Philippines, though the species that Father Blanco identified in the nineteenth century in his *Flora* was called "half-moon" (*Phaseolus lunatus*) and was purple or mottled black in color. Known in the Philippines as *patani* (lima bean in English), it is one of five domesticated species of the genus *Phaseolus*, though not the one most common in Mesoamerica, where *Phaseolus vulgaris* predominated. *Phaseolus lunatus* seems to have been domesticated in two areas: the Isthmus of Tehuantepec in Mexico, and the South American Andes.[28] This begs the question of whether it arrived in the Philippines from New Spain or was introduced over a distinct maritime source, perhaps from the Vice-Royalty of Peru.

26 J. R. Russell-Wood, *The Portuguese Empire, 1415–1808: A world on the move*, John Hopkins University Press, 1998, p. 169.

27 *Idem*, *ibidem*, p. 167.

28 R. H. Andueza-Noh et al., "Multiple domestications of the Mesoamerican gene pool of lima bean (*Phaseolus lunatus* L.): evidence from chloroplast DNA sequences," *Genetic Resources and Crop Evolution*, Mar. 2013, Vol. 60, no. 3, pp. 1069–86.

Turning to the peanut (*Arachis hypogaea*), we find that it was important on the Asian continent by early colonial times, so it is curious that when he begins to describe it (calling it *maní* as in the Caribbean), Father Blanco writes: "I know not if this plant came from America," though he was aware that people in New Spain called it *cacauate* and used it to prepare a delicious chocolate. Although the leaves of the peanut plant served as horse feed on the islands, Father Blanco lamented that native Filipinos did not fully exploit the qualities of this plant, observing that, "the oil from its seeds never spoils, is edible, is better than any other for light, and painting; soap -makers mix it with lye to produce a soap that is very dry, white and odorless."[29] Here we may ask whether he observed these properties of peanut oil directly in the Philippines, or if his account was based on a description from elsewhere, for we cannot forget that around this time some coastal populations in China were producing peanut oil; eg. in the Yangtsé lowlands.[30] Undoubtedly, the Portuguese participated in introducing peanuts into China in the sixteenth century, but they also took them to West Africa, where they were reported in the 1560s in modern-day Senegal and Gambia. There, peanut cultivation may have been related to the slave trade that sent captive Africans to America.[31]

Vegetables

Vegetables have traditionally been staple crops grown in family gardens. Rich in vitamins and mineral salts, their nutritional value is high.[32] By the nineteenth century, three vegetables from America—chayote (*Sechium edule*, from the Náhuatl, *chayotli*; *sayote* in the Philippines); tomato (*Solanum lycopersicum*, called *kamatis*); and chili peppers (*Capsicum* spp., or *sili*)—were used in a wide variety of dishes. Regarding the tomato, Father Blanco wrote that Filipinos "include it in almost all their meals," and used its leaves to dye cotton cloth green.[33] Other vegetables can be added; for example, people used not only the pulp but also the leaves and flowers of squash (*Cucurbita* spp., called *kalabasa*) to prepare dishes. Also interesting is the fact that some plants from Mediterranean gardens, like eggplant (*Solanum melongena*, or *talong* in the archipelago), took hold during the time of Spanish occupation.

Official records contain little information on plants grown in family gardens, do not tell us where they were cultivated, and are mute on

29 M. Blanco, op. cit., p. 567.
30 J. R. Russell-Wood, op. cit., p. 168.
31 *Idem*, op. cit.
32 L. Garnier, op. cit., p. 60.
33 M. Blanco, op. cit., p. 134.

production volumes. However, the fact that most conserve Náhuatl names suggests introduction early in the colonial period, or at least in the time when the Galleon of Manila was plying the seas, for we must recall that the ties between the Philippines and America were broken around 1815.

Fruit trees

In terms of fruit trees, the *chicozapote* (*Achras sapota*) spread widely through the archipelago, where it was called *tsiko*, an adaptation of *chico*. Father Blanco wrote that it "is highly-valued in this country, where good fruits are rare."[34] Though some indigenous Filipino fruits are exquisite to the palate, the fact is that the American fruits which arrived in colonial times and became 'nationalized' in the archipelago had characteristically sweet flavors; eg. plums (*ciruela*, *Spondias purpurea*, *sinigwela* in the Philippines).

Two fruit trees that enjoyed wide acceptance from colonial times are guava and papaya. Indeed, Father Blanco thought that the former (*Psidium guajaba*) was native to the islands, for he wrote: "this little tree may be indigenous to the country [...] though the opposite is widely believed." It was said to be very common throughout the archipelago, where its astringent properties were well-known for it was used to cleanse 'clouds' from people's corneas.[35] That guava was one of the first American trees introduced confirms citations from Gabriel de San Antonio and Antonio de Morga, who in the first decade of the seventeenth century viewed them as part of the islands' natural landscape. In 1686, William Dampier saw guava trees in Mindanao,[36] which means that, despite that island's ongoing conflict with Spain, there were opportunities to exchange plants that flourished there. Soon, Filipino Indians who traditionally prepared betel with the native areca palm (*Areca catechu*) began to use the guava tree "when arecas were not available."[37] This phenomenon of replacing natural native elements with imported species in food preparation was evidenced in various ways in New Spain as well; to give one example, using banana tree leaves instead of those of trees native to Mesoamerica (*Musa* spp.) to wrap corn tamales for cooking is a practice that persists in Mexico today.

Regarding the papaya (*Carica papaya*), another American species, it was taken to the Philippines on the Galleon and soon spread to India and Africa. Father Blanco's description of this fruit is one of the most extensive in his

34 *Idem*, *ibidem*, p. 455.
35 *Idem*, *ibidem*, pp. 417–8.
36 William Dampier, *A New Voyage around the World*, London, James Knapton Press, 1694, p. 311.
37 M. Blanco, op. cit., pp. 417–8.

accounts of American plants, so we decided to transcribe a fragment bellow that emphasizes both its high medicinal value and other applications, including soap production and cosmetics.

Description of the papaya in Flora de Filipinas [Fragment]

> The petioles are hollow and sometimes nine feet long; the Indians fill them with a liquid effective for enemas, and they serve as natural syringes, though with difficulty, for they only take effect if blown with great force. It is said that the leaves are excellent for curing rheumatism when applied to the affected appendage where they cause a healthy eruption, but my observations suggest that relief is transitory. Those leaves are used by the [Indians] as soap. First, they grind them, and then squeeze them in water: and with that they wash new white clothes that bleach well, and dirty clothing to quickly eliminate stains. Though they turn rather green in color, this soon disappears if washed in clean water. It is not good to soak clothes for long in that water, for they will be damaged. This virtue of papaya leaves is shared by many other plants in the Philippines, especially those that produce a milky juice. I believe the Indians discerned this virtue, guided only by the similarity that seems to exist between dissolved soap and the milky juice, and while to European eyes this seems foolish, the results are often happy. The juice of the pulp is used as a cosmetic to remove stains from the skin caused by the sun's heat. In very small doses, like one or two drachmas for a child and two-to-four for an adult, papaya milk mixed with an equal amount of milk and an aromatic infusion, and then drunk, is an efficacious remedy for all kinds of worms, as are the seeds that, when dried and ground and taken at a measured dose for many days, kill all worms.[38]

38 "Los peciolos son huecos y a veces de nueve pies de largo; los indios los llenan del líquido conveniente para las lavativas, y les sirven de jeringas naturales, aunque muy trabajosas, porque solamente hacen su efecto soplando con mucha fuerza. Las hojas se dicen que son excelentes para curar la reuma, aplicándolas a los miembros enfermos en los que ocasiona una erupción saludable, pero por lo que he observado en mí mismo, el alivio es pasajero. Las mismas hojas sirven a los naturales en lugar de jabón, para lo cual las machacan primero, y después las exprimen en agua: con ella lavan la ropa blanca nueva para que blanquee mucho y también la ropa sucia, para quitarle prontamente las manchas: y aunque tome un color verde, este luego desaparece lavándola en agua clara. Tampoco conviene remojar por largo tiempo la ropa en el agua dicha, porque se maltrata. Esta virtud de las hojas de la papaya es común a otras muchas plantas de Filipinas, y regularmente a los que despiden un jugo lechoso. Los indios creo que adivinan esta virtud, gobernándose únicamente por aquella semejanza que aparentan tener entre sí el jabón desleído y el zumo lechoso, y aunque a los ojos de los europeos esto parezca una simpleza, los resultados muchas veces son felices. El zumo de la pulpa del fruto se emplea como cosmético para quitar las manchas de la piel, causadas por el ardor del sol. La leche de la papaya en muy corta dosis como una o dos dracmas para un muchacho y de dos a cuatro para un adulto, mezclada con igual peso de leche, y combinado todo con una infusión aromática, y bebido, es remedio eficacísimo contra toda especie de lombrices, y lo mismo las semillas. Éstas secas y trituradas se toman en dosis de un escrúpulo por muchos días, y hacen morir todos los gusanos." (M. Blanco, op. cit., pp. 803–4.)

The papaya is now a staple in some alimentary regimens in the Philippines, and an element of social cohesion in some places; for example, the town of Romblon, where it is planted in people's yards beside other, native vegetables. In addition to its importance in the alimentary culture of this island, the papaya serves as a source of nutrition when fish become scarce, or when small-scale agriculture suffers a crisis. Since it forms part of household agriculture, a whole network of relatives and friends works to supply papaya to the islands' inhabitants, and because it can be exchanged for other foods it has become an element of cultural identity.[39] For example, the Church in Miagao (Iloilo province), built in the last quarter of the eighteenth century and added to the UNESCO's list of World Heritage Sites in 1993, reveals the talent of artisanal stoneworkers who spared no effort to sculpt an imposing façade that shows St. Christopher crossing a river tied to a coconut palm (the Filipino tree *par excellence*) carrying the Holy Child on his shoulders. Upon closer examination, one sees that the lateral panels of the façade are adorned by two trees of special significance for Filipino culture: papaya and guava, both of American origin and implanted in the archipelago in colonial times.

2 Detail of the façade of the Church in Miagao.
Miagao, Iloilo, Island of Panay, Western Bisayas, the Philippines.
Photograph by Paulina Machuca (2013).

39 Nota F. Magno, "The place of papaya in the island municipalities of northwestern Romblon, Philippines," paper presented in the Seminario Internacional Año de la Fraternidad Mexico--Filipinas, Guadalajara, Jalisco, Mexico, 27–28 Nov. 2014.

Three other American fruit trees that came to the Philippines in colonial times, though we cannot document them in detail, are soursop (*guanábana*, *Anona muricata*), called *guayabano*; *guamúchil* (*Pithecellobium dulce*), or *kamatsile*, and *chirimoya* (*Anona squamosa*), known as *atis*. Father Blanco mentions the latter's soft, aromatic fruit, "one of the best in the Philippines," though he warns that it is hard to eat because of its abundant seeds. He compared the aroma of its flowers to coconut wine.[40] In the case of avocado (*Persea Americana*), it is highly probable that its introduction and diffusion in the archipelago date to the period of U.S. intervention, as this would explain why it is not known by its original Náhuatl name—*ahuacatl*—but by the English name "avocado."

Medicinal plants

One of the most widely-used medicinal plants on the islands is *akapulko* (*Sennaalata; Cassia alata*), a name that alludes to the port where it was shipped. Father Blanco mentions it as a remedy for herpes, and native Filipinos rub their insteps with its leaves. Because of its ability to cure herpes it is also called *gamot sa buni*. It is probable that this plant, in particular, enjoys broader se in the herbology of the archipelago and other areas of Asia than traditional applications where it originated.[41] And the tree called *sacalasúchil* (*kalatsutsi* or *calachuchi*; *Plumeria rubra*) is not far behind, for by the mid-eighteenth century people were aware of several of its medicinal properties: in *Ilocos*, its bark was used as a purge, and its milky sap was placed in the navel or on the insteps and other areas of the skin to cure mange. The syrup extracted from the bark cleansed the stomach, and an infusion of leaves taken for prolonged periods cured venereal diseases. In his *Flora*, Father Blanco timidly wrote that "It is believed that this tree came from America," though he adds that:

> in his treatise on the herbs of the Islands, P. Ignacio Mercado recommends well-ground bark for dropsy, taken at a dose of two drachmas cooked in seventeen ounces of water to boil down to eight. This infusion [...] is taken after a light, early dinner: and to mitigate the bitter taste, one can eat candied anise. The water may be drunk for three or four consecutive nights, or once every three days. If after nine doses the dropsy does not disappear, then it is left for ten

40 M. Blanco, op. cit., p. 470.
41 *Idem, ibidem*, p. 340.

> days, then the patient can take it again as many times as he can bear, though it is always convenient to proceed only after consulting with an authority.[42]

Clearly, this tree was known and used extensively in the Philippines, and we are enlightened to learn that the proto-physician Francisco Hernández, in his *Historia de las plantas de Nueva España*, devoted a few lines to this important tree in its region of origin,[43] while in the archipelago it became so important that it holds a place of honor in writings on medicinal plants. Finally, the *Agave Americana*, to which we return below, was another well-known plant in Filipina herbology, where its ground shoots were used to cure cancer.[44]

Stimulants

Two stimulant plants acclimatized especially well in the archipelago: tobacco (*Nicotiana tabacum*) and cacao (*Theobroma cacao*). The first stirred economic interest early in colonial times, and was briefly monopolized in the first half of the seventeenth century despite stiff opposition from Manila's governing council (*cabildo*). During Sebastián Hurtado de Corcuera's administration, a triple monopoly of *buyo*, *bonga* and tobacco was enacted on December 22, 1637 that set a price of 8,000 pesos for the first two, and 1,600 for tobacco. A licitation was held in which Juan de Mendoza and Ascanio Guazoni emerged victorious,[45] but Juan Grau de Monfalcón, the General Procurator of the Philippines, denounced the irregular operation of this monopoly, citing the fact that "natives can no longer sell on their own account, which greatly harms the entire population due to the severe excesses generated."[46] He championed free trade not only in *buyo*, *bonga* and tobacco, but also wine, oil and fruits.[47] Systematic Royal prohibitions in 1625, 1641 and 1642 impeded monopolistic sales of tobacco,[48] and this issue did not re-emerge until the second half of the eighteenth century, as we shall see below.

42 "El P. Ignacio Mercado en su tratado de yerba de las Islas pondera mucho para la hidropesía la corteza bien molida en dosis de dos dracmas y cocida en diez y siete onzas de agua, hasta que después de filtrada quede en ocho. De esta infusión, dice, se ha de tomar parte después de cenar poco y temprano: y para mitigar el amargo, se puede comer anís confitado. Esta agua se puede beber tres o cuatro noches seguidas, o una vez cada tres días. Si habiéndola tomado por nueve ces no se desvanece la hidropesía, después de descansar unos diez días, se vuelve a tomar las veces que pueda sufrir el paciente, pero siempre conviene obrar con consulta de un facultativo." (M. Blanco, op. cit., p. 111–2.)

43 Francisco Hernández, *Historia de las plantas de Nueva España*, Vol. III, Mexico, UNAM, 1943, pp. 806–7.

44 M. Blanco, op. cit., p. 258.

45 AGI, *Filipinas*, 8, r. 3, no. 96.

46 AGI, *Filipinas*, 28, no. 19.

47 AGI, *Filipinas*, 333, L. 12, f. 323r–6r.

48 AGI, *Filipinas*, 28, no. 3.

Within a few decades of its arrival, tobacco had become important even in areas beyond the Spanish Crown's dominion—especially Muslim Mindanao—but that felt the effects of the globalization process which emerged at that time. It is noteworthy that during his travels through Mindanao in 1686 William Dampier observed the importance of tobacco production there, not only for internal consumption but also for trade with the Dutch, who journeyed from Terrenate and Tidore to obtain it: "for much tobacco grows on this island [Mindanao], more than on any island or country in the East-Indies that I know, except Manila."[49] Dampier added that while theirs was a high-quality product, the islanders lacked the commercial acumen that, in contrast, characterized Spaniards in Manila: "their tobacco is as good as, or perhaps better, than Manila tobacco, but they have not that vent for it as do the Spaniards."[50] Upon comparing tobacco from Mindanao and Manila, he noted that the former was darker in color and had longer leaves, while the leaves of Manila tobacco were yellowish and less resistant, though still pleasant to smoke. Dampier's account clearly establishes that at least two varieties of *Nicotiana tabacum* had become satisfactorily acclimatized to conditions on the archipelago.

According to Father Blanco, in the first half of the nineteenth century the best Filipino tobacco came from Gapan, north of Manila, though he also lauded the quality of products grown in Bisayas at sites like Passi, Laglag and Lambunao, in Iloilo, Maasin in Leyte, and on the island of Negros. He held that tobacco smoke was not only healthy but necessary in the archipelago's climes: "it consumes phlegm and protects from the humidity and bad effects of the morning dew, and so is good for those who take it."[51] Dust from the leaves was a cure for headache, but the good Father warned that it could be harmful if consumed in excess.

It was not until the final quarter of the eighteenth century, after the implementation of the Bourbon Reforms, that the tobacco monopoly came into effect.[52] In his project to catalyze the islands' economy after the period of British occupation, the Conde de Tepa, Francisco Leandro de Viana, *fiscal* of the *Audiencia* of Manila, observed that almost all Spaniards on the islands, seculars and ecclesiastics alike, smoked tobacco, while the Indians, he wrote, "learned to smoke before learning to think."[53]

49 W. Dampier, op. cit., p. 333.
50 *Idem*, *ibidem*, p. 334.
51 M. Blanco, op. cit., p. 100.
52 E. C. de Jesus, *The tobacco monopoly in the Philippines. Bureaucratic enterprise and social change, 1766–1880*, Quezon City, Ateneo de Manila University Press, 1980, pp. 10–1.
53 *Idem*, *ibidem*, p. 29.

The mountain Igorots, who had no knowledge of smoking before the Spanish arrived, began to make fine pipes of clay, metal and wood, mimicking indigenous American models.[54]

Cacao (*Theobroma cacao*) followed a similar process to that of tobacco. While it was cultivated in the archipelago by at least the seventeenth century, production did not reach significant proportions until the Bourbon period. During the government of Pedro Manuel de Arandia, a military officer sent to govern the Philippines in 1754, a series of reforms were implemented in an effort to reactivate the islands' economy. As a result, cacao, coconut palms, *bongas*, pepper, and cotton became the principal crops grown in Luzon. By July 1758, we know that there were 608,092 cacao trees in that region, distributed as follows:

Place	Number of cacao trees
Province of Tondo	11,136
Province of Bulucan	69,107
Province of Pampanga	62,457
Province of Pangasinan	97,093
Province of Ilocos	88,488
Jurisdiction of Cavite	3,133
Province of Balayan	14,587
Province of Camarines	190,942
Province of Capiz	16,146
Province of the Laguna of Bay	55,003
Total	608,092

3 Cacao trees in Luzon, 1758.
Source: AGI, *Filipinas*, 386, no. 31

Father Blanco's description of cacao confirms that it was consumed widely on the islands by the first half of the nineteenths century. Interestingly, one of the trees planted to provide shade for cacao plantations was the achiote, another American species. Father Blanco wrote:

> Natives today make much use of cacao, for many drink chocolate; but mixed with one-eighth part toasted rice, and sometimes much more, making a clear preparation of chocolate that is good only for their palates. Others add toasted coffee in abundance. Women in Manila mix cacao with the fruit of the *pisa* or *pilavi*, a tree from which [they] extract pitch. Natives also eat this fruit when it is [still] green. Cacao butter, which floats on the surface of the water, when ground and cooked in [water], is often used, and with good reason, for it is excellent to treat burns and soothe the stinging burn of sores, excoriations and ulcers on women's breasts: it also provides great relief when applied to hemorrhoids. The

54 *Idem*, *ibidem*, p. 3.

> use of well-made chocolate has the virtue of providing good cheer and chasing away melancholy: though many who drink it late in the afternoon cannot sleep afterwards; it is also thought to harm those who are prone to apoplexy or have been threatened by it.[55]

Spices

Filipino cuisine today would be inconceivable without achiote (*Bixa orellana*), known as *achuete*, or chili (*Capsicum* spp.), as mentioned above in the section on vegetables. Spaniards in the Philippines used achiote as a substitute for saffron, but native cuisine adopted it quickly, even using it as a dye for textiles and paintings.[56] It is probable that various species of chili made their way to the Philippines. Father Blanco mentions *Capsicum annuum*,[57] the most widely-cultivated species of the genus *Capsicum*, though one is surprised to read that "This plant sprouts on its own almost anywhere, and *is indigenous to the islands*." This reveals, once again, the phenomenon of appropriation. In addition to its "extremely spicy" fruit, chili served as a flavoring in Filipino dishes, and its leaves were cooked and mixed with sulfur (*alumbre*) to produce a yellow dye that was "most good and firm." Moreover, ground chili plant leaves were applied to the bites of rabid dogs.[58] In the mid-sixteenth century, both *Capsi-cum annuum* and *Capsicum frutescens* were present in Goa, where they were called "Pernambuco peppers" because the Portuguese had taken them there from Brazil. Soon they would arrive in China through Canton or Macao.[59] We have no news as to when *gorda* or Tabasco chili peppers (*malagueta*, *Pimenta dioica*) arrived in the Philippines, though this spice sparked the interest of botanists in the eighteenth century.

55 "Los naturales de hoy día hacen ya un gran uso del cacao, pues muchísimos toman chocolate; pero mezclan una octava parte de arroz tostada, y a veces mucho más, y haciéndolo muy claro, preparan un chocolate solamente bueno para sus paladares. Otros le añaden café tostado en sustancia. Las mujeres de Manila mezclan con el cacao el fruto de la *pisa* o *pilavi*, árbol del que se saca la brea del país. También comen los naturales el fruto verde. La manteca de cacao, que nada en la superficie del agua, cuando después de triturado se cuece en ella, es muy ponderada y con razón, pues es excelente para las quemaduras y para suavizar el escozor ardoroso de algunas llagas, de las excoriaciones y úlceras de los pechos de las mujeres: también alivia mucho aplicada á las almorranas. El uso del chocolate bien hecho, tiene virtud de alegrar y destierra la melancolía: pero en recompensa a muchos les quita enteramente el sueño si lo toman por la tarde; también se cree que es dañoso a los que son propensos o están amenazados de apoplejía." (M. Blanco, op. cit., p. 601.)

56 M. Blanco, op. cit., pp. 236–7.

57 He recorded it as *Capsicum minimum*.

58 M. Blanco, op. cit., p. 133.

59 J. R. Russell-Wood, op. cit., p. 169.

Textile plants

Many native societies in the Philippines have been recognized for their knowledge of the processes of elaborating textiles from natural fibers. Perhaps the best-known plant was *abacá* (*Musa textilis*), which has been examined in numerous studies and monographs. The *Tratado de las islas Filipinas* by Miguel de Luarca (1582) mentions this plant on Cebu Island: "[Where] [...] there is little, almost no cotton, because the clothes they wear are made of banana trees, from which they make a cloth like *bocací* in colors the natives call *medriñaque*."[60]

Luarca equated *abacá* to bananas not only due to their similar appearance but because both are related to the genus *Musa*. The availability of vegetable fibers for textiles, and the traditional knowledge of the art of weaving among Filipino women, did not go unnoticed by the first Spaniard who explored the archipelago, as Father Alizina wrote the following words about the women of Bisayas:

> It is worthy of admiration and even imitation that little girls are barely able to walk when their mothers begin to sit them at the loom or have them weave *ábaca* fibers, from which they usually make their [textiles] [...] In the same way that little girls begin to weave these fibers, that they call *panogot*, at a very young age, so too do old women and even the blind and those who can no longer move end their lives in this exercise, for it is rare to see any healthy person not busy with this or spinning cotton where it exists and using it to make cloth.[61]

It was in this setting that the pineapple (*Ananas comosus*) came on stage, not precisely as an edible plant but as one that produced a highly-coveted fiber that would soon provide Filipinos with one of their most cherished symbols of identity: the different clothing styles made from pineapple fiber, the most well-known of which is the *barong tagalog*, a shirt worn by men on festive occasions.

It is difficult to determine when or how the pineapple came to the islands. It may have been introduced by the Portuguese through their Africa-India-Macao trade route, but it is more likely that it came on the Galleon of Manila, for from the very beginning it was known by its Castilian name,

60 AGI, *Patronato*, 23, r. 9, fl. 2.

61 "Es cosa digna de admiración y aun de imitación el ver que apenas saben andar las niñas cuando las comienzan sus madres a imponer en el atar o juntar las hebras de la ábaca, que es de lo que hacen comúnmente sus tejidos [...] Del mismo modo que las niñas comienzan de muy pequeñas a juntar estas hebras, que llaman *panogot*, acaban las viejas y aun las ciegas y las que ya no se pueden menear, con la vida el dicho ejercicio, pues rara se hallará estando buena que no esté ocupada en esto o en hilar algodón donde lo hay y usan de tejer mantas de él." (V. Yepes, op. cit., p. 38.)

and not the Portuguese form *ananás*, derived from the Guaraní word *naná*. But this is conjectural. Antonio de Morga mentioned pineapples in Luzon around 1609, but it was not until the late eighteenth century that clothes were first made from this plant. In the 1830s, Father Blanco stated: "Indians extract very fine threads from the leaves of these plants [pineapples], with which they make shirts of portentous delicacy."[62] As the nineteenth century advanced, textiles made from pineapple became increasingly complex and were combined with other kinds of fibers, including silk. In 1846, Jean Mallat was able to identify four kinds of garments made of pineapple fiber: pineapple *nipis*, pineapple with silk or *sinamay*, different kinds of worked pineapple, and silk *sinamay* combined with pineapple.[63] *Abacá* and pineapple thus became the most important fibers for Filipino textiles, as they still are today among peasants in Aklan and Central Bisayas, where pineapple fields are fenced with *abacas*, whose abundant fibers are believed to stimulate pineapple plants to imitate their production, as shown in Figure 5.

4 An *Aklanense* peasant in a pineapple field with *abacá* in the background. Aklan, Island of Panay, Western Bisayas, the Philippines. Photograph by Paulina Machuca (2013).

62 M. Blanco, op. cit., p. 230.

63 Jean Mallat, *Les iles Philippines considerées au point de vue de l'hydrographie et de la linguistique* [...], Paris, Imprimerie Pollet et Compagnie, 1843, Annexes.

Another species that acclimatized to the Philippines, though less visible than the pineapple, was *Agave americana*, also called *pita*. Its fibers were used to make rope and, especially in Bisayas, to elaborate a very fine cloth called *nipis*.[64] In the late nineteenth century, the *Agave angustifolia* (*Agave vivípara*) was being exported in large quantities from Ilocos Norte to other countries.[65]

Dyes

We have seen that achiote, tomato and chili were all used as textile dyes, but in reality indigo (*añil*, *Indigofera tinctoria*) and Brazilwood (*palo de brasil*, *Caesalpinia echinata*) were by far the two most important American colorants, not only in the Philippines, but over broad expanses of the Spanish Empire. Father Colín's *Labor evangélica* tells us that Brazilwood was cultivated in the Philippines by the mid-seventeenth century—due to the high demand for timber and the red dye that was extracted from it—as was American indigo: "The colored tree they call Brazilwood, that the earth produces abundantly everywhere. The açul of the Indies, known in Europe as indigo, an herb grown here by peasants."[66]

In 1773, Francisco Javier Salgado began a project to produce indigo in the Laguna de Bay jurisdiction, specifically the town of San Isidro Calauan, "as in Guatemala, on the island of Santo Domingo, and in other colonies of the Americas."[67] His proposal sustained that the blue dyes produced by natives "lack the firmness and properties that legitimate blue dye offers; moreover, as that dye is mixed with lime it destroys clothing and everything colored with it, causing such damage that they last much less and tear easily."[68] Unfortunately, we have no more information on this project, but at almost the same time, in 1779, Father Matías Octavio, a native of Lerín in Navarra and member of the Augustinian order, promoted a method to elaborate indigo dye. In 1784, he sent the first shipment of a dye produced using his technique to Europe.[69]

64 M. Blanco, op. cit., p. 258.
65 J. P. Sanger, op. cit., p. 154.
66 F. Colín, op. cit., p. 48.
67 The Philippines' largest lake is in Laguna de Bay; formed by a submerged volcanic cauldron it produced a very fertile zone for agriculture, so it was there that several important agricultural projects were conducted, including planting wheat, as mentioned above.
68 AGI, *Filipinas*, 909.
69 M. Blanco, op. cit., pp. 594–5.

Ornamentals

Ornamental plants also deserve mention, though briefly. *Plumeria rubra* has become a true symbol of Filipino nature. This ornamental tree conserves its original Náhuatl name—*cacaloxochitl*—which became *kalatsutsi*, following the linguistic pattern described earlier.[70] The flower calendula (*maravilla*), also called *Don Diego de noche* or *Linda tarde* in Mexico (*Mirabilis jalapa*), was christened as *A las cuatro* in the Philippines because its flowers open at four in the afternoon and close at eight the next morning. *Chochopali* (*Cosmus sulphureus*), meanwhile, from the Náhuatl *xochipali*, is called *cosmos* in the archipelago. All these plants are found on the islands, and while other species of ornamental plants from America, such as *campanylia* (*Thevetia peruviana*) and the *caballero* flower (*Caesalpinia pulcherrima*) (which appears on the national Coat-of-Arms of Barbados in the Caribbean, though it occurs throughout the American tropics) are also known, it is difficult to determine when they arrived. Even the *ceiba* tree (*Bombax pentandrum*), highly-coveted by Mesoamerican cultures in Mexico, adapted very well in the Philippines, and its seeds were sent to the Royal Botanical Garden of Madrid in 1793.[71]

Transporting plants: a trans-Pacific odyssey

Having presented this long list of American plants introduced in the Philippines and acclimatized there, it is time to reflect briefly on the trans-Pacific transport of those species. It is important to remember that the trip from Acapulco to Manila took about two months over a route that was much less perilous than the return journey from Manila to Acapulco, which could take up to six months. Setting out from Acapulco, the Galleon took the Trade Winds to the Mariana Islands and then headed to the port of Cavite, entering through the San Bernardino Strait. This suggests that the presence of American plants on the islands once called *Ladrones* (*i.e.,* Islands of the Thieves) is also linked to the dynamics of the Galleon, but this topic merits a separate analysis. Surely transporting seeds and live plants on journeys of several weeks' duration meant coping with all manner of problems, including the rats, mice and other animals on board the ships. The latent risk was that they could be bitten by insects or other vermin, so in the 1770s Dr. Casimiro Gómez Ortega, a Professor at the Royal Botanical Gardens of Madrid, propo-

70 The Náhuatl word *xochitl* means flower; in colonial times in New Spain it was Hispanicized to *sóchil* or *súchil*.

71 AGI, *Estado*, 45, no. 14.

sed an "easier and safer method for transporting live plants" through the Spanish Empire in America and Asia "by sea and land". He recommended that seeds be wrapped in sulfur paper or impregnated with turpentine to repel animals and pests. We do not know if this method was used earlier on trans-Pacific ships, or if seeds were simply stored in the driest, safest areas of vessels, but the challenges for live plants were much greater, for in addition to rodents, the risk was that saltwater might fall on their leaves:

> The Captain responsible for them must be especially aware that the principal risk for plants on ocean trips is the presence of droplets of the saltwater that impregnates the atmosphere [and] that waves might bathe them in foam such that droplets fall on the plants, and after evaporating quickly leave salt deposits on them, which close their pores, impede transpiration and, in effect, kill them.[72]

To increase plants' chances for survival on ocean journeys, younger trees and shrubs, and wild plants, were preferred. Their roots were often protected with moss, due to its ability to keep them fresh even in small amounts of earth, or none at all. To prevent rodents from digging and damaging roots or seeds that sprouted in the boxes in which live plants were shipped, Dr. Ortega recommended preparing a thick powder of ground glass mixed with earth. For better conservation, he suggested that tuberous roots like yams and sweet potatoes be placed in dry sand, while pulpy fruits with seeds inside could be stored with ground sugar, and delicate plants held in a mixture of sand and clay because the latter can retain humidity for many days.[73] Dr. Gómez' methods were, without doubt, quite sophisticated and need to be understood in the context of period when plants were often shipped to botanical gardens, especially in Madrid. Once again, however, the question of whether any of these practices were adopted on trans-Pacific ships in the sixteenth century remains unanswered, for the colonial sources are silent on this topic.

72 "Debe estar enterado con particularidad el Capitán que se encargue de ellas, de que el principal riesgo que corren las plantas en los viajes de mar, es el que producen las partículas de agua salada de que está impregnado el ambiente siempre que las olas blanquean con la espuma: entonces dichas partículas caen en las plantas, y evaporándose prontamente, dejan en ellas la sal, que cerrando los poros impide la transpiración, y mata en efecto la planta." (Casimiro Gómez Ortega, *Instrucción sobre el modo más seguro y económico de transportar plants vivas por mar y tierra a los países más distantes* [...], Madrid, Imprenta de Joachin Ibarra, 1779, p. 19).

73 C. Gómez Ortega, op. cit., pp. 13–29.

Final reflections

This article focused on two main themes: the motivations of certain social groups in New Spain, both civil and religious, to transport plants of American origin to the Philippines, and their quick acclimatization to conditions there, thanks not only to climatic factors but also the eminently agrarian base of Filipino society; and, second, an analysis of a list of the most important American plants introduced into the Philippines from the second half of the sixteenth century onwards, especially during the trans-Pacific voyages of the Galleon of Manila. The following paragraphs present some final reflections.

One phenomenon that must be considered is replication. It has often been argued that attempts were made to replicate the Spanish model of colonization implemented in New Spain in the Philippines, and these pages certainly provide evidence of this process, as in the case of corn, which was proposed as a second staple food for people on the archipelago when rice was scarce, just as wheat was deemed an option to satisfy people's nutritional needs in New Spain when corn supplies were short. Clearly, the Filipino experience was less successful than that of New Spain, but the objective of replicating the model is latent in our findings.

Also important is the phenomenon of the complementarity of vegetables for consumption and practical uses by Filipinos, who adopted American plants that were similar to some that existed in the archipelago, as in the case of starchy roots, yams and the potato, which came to accompany the native taro, that widely-consumed tuber in Southeast Asia. We must mention as well the case of guava leaves, which were used to prepare *betel* when areca was unavailable. It appears that these processes developed quite naturally among native groups, for there was no imposition by the Spanish authorities. Indeed, the key factor seems to have been local peoples' interest in expanding and enriching their alimentary practices.

One of the most interesting phenomena is that of innovation; for example, extracting fiber from pineapple plants to be woven into garments. This practice was exclusive to the Philippines for it is not known in any other part of the world, not even the Amazonas, where this fruit originated. But we must insist that this innovation did not simply appear out of nowhere, but in a setting characterized by the pre-existing, ancestral cultural condition of a broad tradition of weaving with natural fibers, into which pineapple fiber was inserted as an additional, complementary experience. By the nineteenth century, wearing clothes made of this material had become a symbol of social distinction, as it still is today.

Turning to the linguistic phenomenon derived from the nomenclature of American plants, it is clear that this topic requires separate study. Here we would only point out that many American plants have conserved their original Náhuatl names down to modern times, though with some regional variants. Hence, the ''ch'' in achiote or *chicozapote* was changed to ''ts'' (*atsuete*; *tsiko*), and the letter ''c'' became ''k'', as in cacao, *camote* and *sacalasúchil* (*kakaw*, *kamote*, *kalatsutsi*). Obviously, these variants must be analyzed in light of local linguistic conventions.

The phenomenon of toponymy also merits separate treatment. In the Philippines, toponymies were modified according to different colonial experiences as evidenced, for example, by the fact that in the late eighteenth century there was a town called *Las Piñas* on the outskirts of Manila with its own parish,[74] while the *Río Zapote* (Zapote River) near *Las Piñas*, earned fame as the site of the 1899 battle between Filipinos and North Americans. But what is most surprising is that in 1582 *La isla de Camotes* already existed near Cebu.[75] This brings to mind the words of Miguel León Portilla, who sustained that "toponymy often expressed in distinct tongues, speaks of its history and the ways in which its inhabitants have in different times conceived their geographic scenario, their home in the world."[76] It also tells us that toponymy is not static but something that changes in accordance with transformations of the environment.

Finally, who could have foreseen that some of the plants that arrived from the sixteenthe century onwards would become true national emblems of the Philippines? Recall the famous paintings by the artist Damián Domingo that in the nineteenth century showed men and women wearing delicate garments made of pineapple fiber, or the tobacco companies that distributed their products in diverse areas of the world. And today it is impossible to think of Filipino food without imagining achiote or sweet potatoes, never mind chocolate. If not for the presence of plants of American origin, the Philippines would now be orphaned of part of its culture, just as New Spain, now Mexico, would be orphaned without the plants introduced from the Philippines… but that is a different tale.

74 AGI, *Filipinas*, 338, L. 21, fls. 99v–100v.

75 AGI, *Patronato*, 23, r. 9, fl. 3.

76 Miguel León Portilla, "Toponimia e identidad", *Arqueología Mexicana*, vol. 17, no. 100, Nov.–Dec. 2009, pp. 28–33.

Manuscript Sources

ARCHIVO GENERAL DE INDIAS [AGI]

Estado, 45, no. 14.
Filipinas, 8, r. 3, no. 96; 28, nn. 3 and 19; 29, no. 9, fls. 29r–30v and no. 48; 42, no. 1; 85, no. 94; 193, no. 20; 333, L. 12, fls. 323r–326r; 338, L. 21, fls. 99v–100v; 386, no. 31; 909.
Patronato, 23, r. 9, fls. 2 and 3.

Printed Sources and Bibliography

Andueza-Noh, R. H. et al., "Multiple domestications of the Mesoamerican gene pool of lima bean (*Phaseolus lunatus* L.): evidence from chloroplast DNA sequences," *Genetic Resources and Crop Evolution*, Mar. 2013, Vol. 60, no. 3, pp. 1069–86.

Blanco, Fr. Manuel, *Flora de Filipinas. Según el Sistema sexual de Linneo*, Manila, Imprenta de Santo Tomás, 1837.

Colín, Francisco, *Labor evangélica, ministerios apostólicos de los obreros de la Compañía de Jesús, fundación y progresos de su provincia en las islas Filipinas*, Madrid, Imprenta de Joseph Hernández de Buendía, 1663.

Corpuz, O. D., "Land and agriculture in the Philippines: an economic history perspective," *Philippine Review of Economics and Business*, Vol. XXIX, no. 2, Dec. 1992, pp. 137–60.

Crosby, Jr., Alfred W., *The Columbian Exchange. Biological and Cultural Consequences of 1492*, Connecticut, Greenwood Press, 1972.

Dampier, William, *A New Voyage Around the Wworld*, London, James Knapton Press, 1694.

De Jesus, E. C., *The Tobacco Monopoly in the Philippines. Bureaucratic Enterprise and Social Change, 1766–1880*, Quezon City, Ateneo de Manila University Press, 1980.

Garnier, Lisa, *La agricultura: de lo tradicional a los transgénicos*, Baume-les-Dames, Larousse, 2004.

Gómez Ortega, Casimiro, *Instrucción sobre el modo más seguro y económico de transportar plantas vivas por mar y tierra a los países más distantes* [...], Madrid, Imprenta de Joachin Ibarra, 1779.

Hernández, Francisco, *Historia de las plantas de Nueva España*, Tomo III, Mexico, UNAM, 1943.

León Portilla, Miguel, "Toponimia e identidad," *Arqueología Mexicana*, Vol. 17, no. 100, Nov.–Dec. 2009, pp. 28–33.

Machuca, Paulina, "El arribo de plantas a las Indias Occidentales: el caso del Balsas-Jalisco a través de las Relaciones geográficas del siglo xvi," *Relaciones. Estudios de historia y sociedad*, Vol. XXXIV, no. 136, 2013, pp. 73–114.

Magno, Nota F., "The place of papaya in the island municipalities of northwestern Romblon, Philippines," paper presented at the Seminario Internacional Año de la Fraternidad México-Filipinas, Guadalajara, Jalisco, Mexico, 27–28 Nov. 2014.

Mallat, Jean, *Les iles Philippines considerées au point de vue de l'hydrographie et de la linguistique* [...], Paris, Imprimerie Pollet et Compagnie, 1843.

Manalastas, José Elías (Fr. Anselm) M., OSB, "Maize: Mexico's gift to the Filipinos," paper presented at the Seminario Internacional Año de la Fraternidad México-Filipinas, Guadalajara, Jalisco, Mexico, 27–28 Nov. 2014.

Matthews. P. J. et al., "Irrigated taro (*Colocasia esculenta*) in the Indo-Pacific," *Senri Ethnological Studies*, 78, 2012, pp. 307–40.

Morga, Antonio de, *Sucesos de las islas Filipinas*, Francisca Perujo (ed.), Mexico, Fondo de Cultura Económica, 2007.

Pinar, Susana, *El explorador del Índico: Diario de viaje de Francisco de Noroña*, Madrid, CSIC, 2009.

Pinar, Susana, *El sueño de las especias. Viaje de exploración de Francisco Noroña por las islas de Filipinas, Java, Mauricio y Madagascar*, Madrid, CSIC, 2000.

Russell-Wood, J. R., *The Portuguese Empire, 1415–1808: A world on the move*, John Hopkins University Press, 1998.

San Antonio, Gabriel de, "Breve y verdadera relación de los sucesos del reino de Camboya" in Gabriel de San Antonio and Rodrigo de Vivero, *Relaciones de la Camboya y el Japón*, Roberto Ferrando (ed.), Madrid, Historia 16, 1988, Colección Crónicas de América 46, pp. 39–129.

Sanger, J. P. (dir.), C*ensus of the Philippine Islands. Taken under the Direction of the Philippine Commission in the Year 1903*, Vol. IV, Washington, The United States Bureau of the Census, 1905.

Yepes, Victoria, *Una etnografía de los indios bisayas del Padre Alzina*, Madrid, CSIC, 1996.