The Production of Silk

Introduction

In this lesson, we will learn about silk production, which specialists call sericulture. The process includes the cultivation of silk caterpillars (called silkworms), growing mulberry trees that produce leaves that the silkworms eat, and the weaving and dyeing technologies. All of these processes were impacted by the changing global environment. Finally, we will also examine how silk production changed as it spread outside of China.

Once the cocoons are large enough, spinning the silk may take about a week, after which the cocoons must be unraveled, a process called reeling. For this process, the cocoons were placed in a pot of hot water, which killed the worms and loosened the filaments, causing the cocoons to float. The filaments from several cocoons are reeled off together to make a strong thread. The vertical threads, called the weft, are reeled individually. Because the horizontal threats, called warp, need to be stronger, it was necessary to twist several single threads together on a spooling frame. After that, silk threads were wound onto smaller reels for weaving. In preparation for weaving, the warp threads are laid out and rolled up. For simple weaves, one woman could operate a treadle loom, using her foot to raise the heddles (a cord with an eye through which the threads pass in the weaving process). More complex weaves required a two-person draw loom. The person perched above moves the heddles, which allow the weaving of more complex multi-colored patterns.

THE PRODUCTION OF SILK

Silkworms

Not only do silkworms needs to keep the silkworms warm, growers have to carefully monitor the moisture in the place where they are kept. In dry conditions, especially in winter and summer, mulberry leaves wilt, which decreases the amount of food available for the silkworms. One 17th century folk song indicates how much sericulture relied on climate and temperature:

> To be heaven, one better not to play the role of April:
> Silkworms need warmer and gentle temperature
> while the wheat prefers colder weather.
> Rice needs sun, hemp needs rain,
> Ladies who pick up mulberry leaves want sunny and
> dry weather.

Thus, important silk producing areas in the world, such as the Lower Yangtze region in eastern China, Vietnam, Oaxaca region in southern Mexico, and Venice in northern Italy, are all warm and humid places.

Weighing and Sorting Cocoons

Key Terms:

Sericulture

Tiangong Kaiwu

Little Ice Age

canshen

Yangtze River

Quangzhou

Xingshi hengyan

Bombyx Mori

cochineal

Mulberry Trees

Mulberry trees are critical to the growth of silkworm species. It is estimated that every pound of raw silk required about 200 pounds of mulberry leaves to produce. Therefore, if government officials wanted to promote a silk industry, they had to consider the availability of mulberry trees locally, including sometimes encouraging farmers to abandon other crops for the trees. By the seventeenth century, growers understood there were different types of mulberry trees. In 1620, the Frenchman John Bonoeil recorded three varieties: black mulberry (*Morus nigra*), white mulberry (*Morus alba*), and red mulberry (*Morus rubra*). While they don't look all that different in appearance, difference in their leaves affects silk production. The white mulberry originated in South and East Asia, including China, produced very fine silk that absorbed dyes well. Black mulberry is native to West Asia and had long since been introduced into Europe; it produced a stronger but less refined silk. Red mulberry is mostly found in the Americas, but silkworms don't prefer it; it can only be used in combination with leaves from other treats. That fact explains why when the Spanish introduced black mulberries into the Americas when they started to produce silk there.

The Circulation of Production Techniques

Over centuries, knowledge about sericulture spread from China to other areas of Asia, and starting in the eleventh century CE to Europe, and then in the sixteenth century to European colonies in the Americas. As it spread, so too did knowledge about production techniques, which had to be adapted to local environmental conditions. For instance, in the 17th century, the Chinese treatise *Tiangong Kaiwu* was first introduced to Japan and France. This book records how to improve the yields of mulberry trees. These treatises record how to cut mulberry trees' leaves and roots to maximize the following years' production. Such discussions were usually quite detailed when it came to arranging and treating the trees according to the annual cycle.

Giovan Andrea Corsuccio

Producers also tried to adapt techniques to their local climate. Italians were among the first in Europe to do scientific research regarding sericulture. In 1581, the Italian scientist who specialized in the cultivation of silkworms, Giovan Andrea Corsuccio, provided useful suggestions for picking up mulberry leaves during his region's heavy rains, including wrapping them on a piece of paper and then let them dry near a fireplace. When Mexico began its sericulture industry, the Spanish bishop Juan de Zumárraga (1468–1548) compiled a booklet to teach readers how to raise silkworms. This booklet and similar works paved the way and facilitated the sericulture in New Spain. To improve results, producers in New Spain also introduced new species of trees and silkworms.

During the sixteenth and the seventeenth centuries, governments in Europe, the Americas, and Asia actively sponsored the spread of the silk industry. European governments, though, were the most active. They brought this enthusiasm to their American colonies as well. Expanded silk production boosted rural economies where mulberry trees were and silkworms cultivated. It also spurred on urban economies where the silk processing and weaving took place. Finally, it provided jobs for people transporting goods between the countryside and cities. European governments encouraged growth in the silk industry as a way of investing in government revenues collected from taxes, which was a form of mercantilism.

Il Vermicello Dalla Seta
by Giovan Andrea Corsuccio

Juan de Zumárraga, first Archbishop of Mexico City

Explore More:

How Silkworms made Silk

Climate Change

A period of cooling that historians call the "Little Ice Age" also affected the silk industry. This climate fluctuation was mainly manifested by abnormal climate cycles and unpredictable seasonal changes. For example, on April 24, 1692, a French reporter complained, "The weather is very cold, the weather is unreasonable, and there are no leaves on the trees." These climate fluctuations were not good for silk production. From 1687 to 1692, cold winters and cool summers shortened the growing season, which led to a series of bad harvests. While historians have focused more attention on the effects of the Little Ice Age in the North Atlantic, the effects were evident in the Americas and China as well. The decades from 1620 to 1640 witnessed the lowest temperatures on earth since 1000 CE. In addition, the eruption of the Huanyaputina volcano in southern Peru in the year 1600 had dramatic climactic effects throughout the Americas, including declining temperatures, for years. Such volcanic eruptions produced enormous ash clouds that reduced the amount of solar energy received by the earth. Similar volcanic activity occurred in Southeast Asia between 1641 and 1643, which led to cooler periods in China as well.

Want to Learn More?

Climate Change, Chaos, and the Little Ice Age

In addition, the eruption of the Huanyaputina volcano in southern Peru in the year 1600 had dramatic climactic effects throughout the Americas, including declining temperatures, for years. Such volcanic eruptions produced enormous ash clouds that reduced the amount of solar energy received by the earth. Similar volcanic activity occurred in Southeast Asia between 1641 and 1643, which led to cooler periods in China as well.

A Scene on the Ice near a Brewery, 1615

Silk Production in China

The Yellow Emperor

China has a long history of the production of silks textiles. According to Chinese myth, sericulture and the weaving of silk cloth was invented by the wife of the mythical Yellow Emperor who is said to have ruled China in about 3000 BC. The oldest silk found in China has been dated to about 3630 BC. The oldest known written reference to silk is on a bronze fragment dating to the Shang Dynasty (c.1600–c.1050 BC).

Tilling

Confucian thought encouraged the tasks involved in silk production to be divided by a strict binary understanding of gender. Ancient Confucian expectations understood the model for an idealized family and society using the phrase "Men tilling and women weaving." According to this understanding, women worked indoors, sewing, weaving, cloth making, and embroidering. Meanwhile, men worked on chores done outdoors. Following these expectations was an expression of morality. In addition, Confucian teachings also taught that silk was to be cultivated within the confines of the individual household. The government actively supported this approach, including by collecting tax revenues by family unit.

Until 917 CE, however, the government policy toward silk production was largely passive. Government emphasis on silk production was conveyed through the sacrificial ceremony dedicated to *canshen,* a kind of deity or patron saint of silkworms, and as well as on government bans on the destruction of mulberry trees. Throughout the year, offerings were made to *canshen* at time of first hatching, at the time of mounting, on New Years Day, on the Morning of Flowers (the twenty second day of the second month), on the birthday of the silkworm (twelfth day of the twelfth month), at the Dragon Festival (fifth day of the fifth month), at the Mid-autumn Festival (in the middle of the eighth month), and so forth. In most cases, incensed was burned for *canshen*. Upon the occasion of hatching and mounting, the deity would be offered a pig's head, a fish, some fruits, and some wine.

Silk Weaving

Weighing and sorting the cocoons, Sericulture by Liang Kai, 1200s

During the Song Dynasty (960–1127), the government aggressively started promoting domestic silk production. For instance, officials encouraged farmers to plant mulberry trees on uncultivated ground. From the 12th century, the production center of silk gradually moved from northern to southern China after the Song dynasty's center of power shifted to the Lower Yangtze River region following a series of wars with a rival power in the north. The so-called Southern Song (1127–1279) moved their capital to Lower Yangtze region. Silk production also increased in that region because of the urbanization in the Nanjing and Zhejiang Provinces that shared the Lower Yangtze region. During this period, goods previously traded on the land-based Silk Road routes increasingly shifted to maritime routes via the southern city of Quangzhou (in Fujian Province) which became the main port for trade into the Indian Ocean.

The policies of the Mongol-led Yuan Dynasty (1271–1368) toward silk production were more systematic and evidence based. The new government established a special ministry for agriculture and silk production. In 1285, it also ordered the production and distribution of a book known as *Essentials of Agriculture and Sericulture*. In 1318, the government began distributing a chart showing farmers how to plant mulberry trees. And in 1328, the Yuan government also issued fourteen news articles promoting and regulating agriculture and sericulture.

Want to Learn More?

"Silk and the Song Dynasty"

Guide to Pruning Mulberry Trees

The Ming Dynasty (1368–1644), which ruled during the period we are studying in this lesson, encouraged silk production through its tax structure. Instead of cash, individual households could also pay their taxes in silk under the "double tax" system (which changed after the Single Whip reform, discussed in Reading 1). The government even asked residents of the silk-producing city of Songjiang (in Nanjing Province) to submit only silk to pay taxes. The government also required half a *mu* (a unit of land measurement) of mulberry trees for every five to ten *mu* of land. It also put a heavy fine of nearly ten yards of silk on those who failed to meet the government's demand. In addition, the Ming government and continued produce and distribute treatises assisting in silk production.

During the mid-late Ming era, silk production decentralized due to increasing labor divisions and the relaxation of government controls over the industry. The official Weaving Bureaus declined in importance. Towards the end of the dynasty, they were abolished entirely, as private textile weaving flourished. During the late Ming era, the number of looms owned by private producers exceeded 10,000, while the government only operated about 3,500.

As the global export of silk increased demand for Chinese silk, production increased. Many farmers shifted from growing rice to growing mulberry trees. Increasing production also encouraged local governments to relax their management of agricultural production. Silk production mainly concentrated in two regions: the Lower Yangtze River valley and around the southern port city of Guangzhou (in Guangdong Province) – both of which offered both a suitable climate and a sufficient labor supply.

Ming China, c. 1580

The development of silk production in the Lower Yangtze region can be told from a popular 17th century fiction, *Xingshi hengyan* (*Stories to Awaken the World*). One story in this collection is about a town near the county of Suzhou that specialized in silk production. "The sound of weaving machine continues day and night," the story explained. In the central market, many traders depicted in the story buy silk and sell to other places. So many merchants come there to buy textiles that one cannot find a place to stand.

The poem reads:

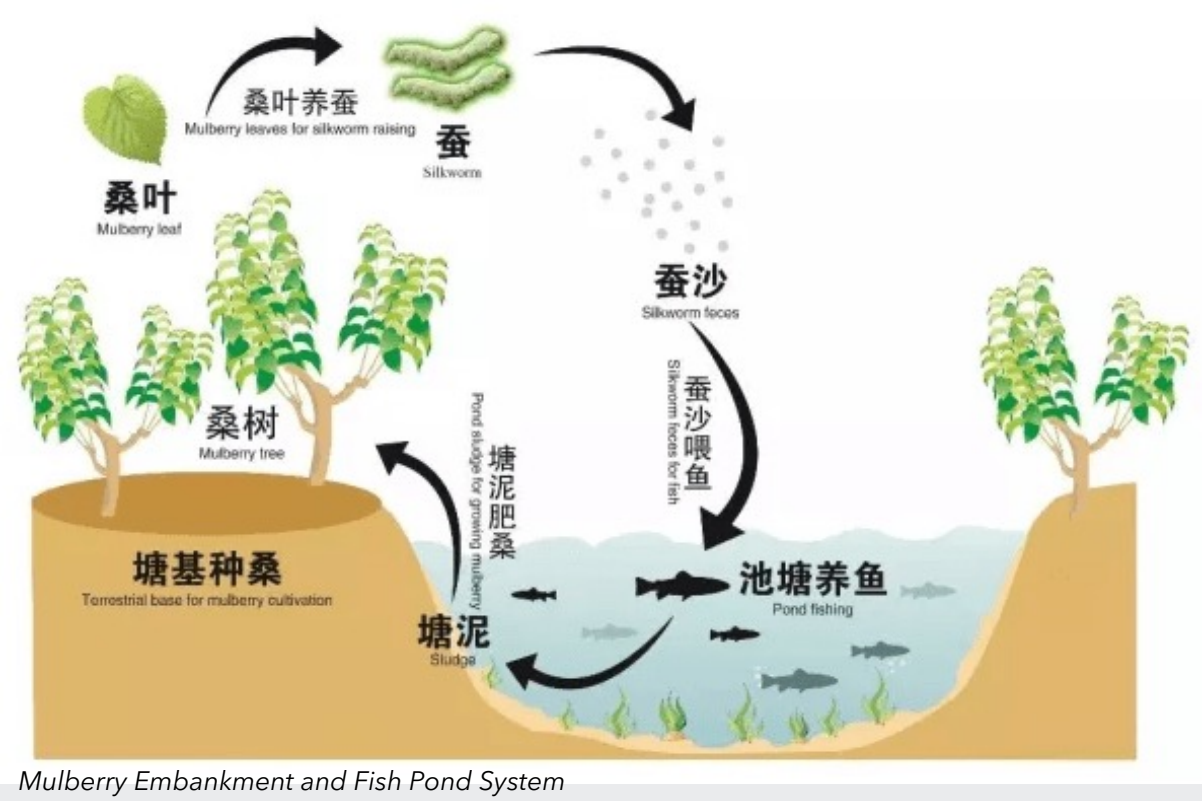
> *With the east wind, the second lunar month is warm and comfortable,*
> *In the Jiangnan [Lower Yangtze] region, everywhere is busy with sericulture.*
> *Silkworms need gentle and warm weather and the mulberry leaves need dry climate,*
> *The silkworms are as bright as the good jade, with beautiful gloss.*
> *Reeling cocoons to make ten thousand of raw silk,*
> *Big and small baskets lay next to the weaving machine.*
> *Beautiful ladies working on the threads with their fragrant saliva,*
> *One weft thread and one warp thread make textiles on the machine.*
> *The sound of the machine resembles the music rhythm,*
> *Flowered patterns accumulate on the silk textile.*
> *No need to worry about feeding eight people in the household,*
> *In the next day there are merchants coming from afar.*

Of course, this poem romanticized the process. In this version, workers' appreciation for earning a healthy profit outweighs the intensive labor required for such large production. This fictional account also explains that families were so devoted to producing silk that during the forty days between hatching and cocooning, family closed up their houses and concentrated on silkworm cultivation. No one visits each other or has any energy to take care for other matters. The poem also stressed the beauty of the women, adding to the allure of the textiles.

Bombyx Mori silkworm

Bombyx Mori cocoons

The increased demand for silk during this era paved the way for the spread of an agricultural model known as “mulberry embankment and fish pond.” This model, which originated in ancient China, underwent rapid developments from the seventeenth century. Farmers planted mulberry trees on the embankments of fishponds. They devoted about 40% of their land to the devoted to fishpond and 60% to the mulberry trees. The mulberry trees’ roots helped to keep the soil around the pond from eroding. The profits from the silk supported the healthy operation of fish cultivation, which fed on worm feces and cocoons that the silkworms had shed. The underlying concept was to align production with the annual calendar, to maximize economic profits while maintaining a sustainable ecological system.



Mulberry Embankment and Fish Pond System

In this model, the arrangement of tasks followed an annual cycle. In February, Mulberry trees were taken care of, and larvae were stocked. In March and April, trees were fertilized. Silkworms were raised in May and in June they were sold. In July and August, the pond mud was cleaned, and fish were fed with the leftovers from the cocoons. Especially in warm and humid Guangzhou, where mulberry trees produced leaves every month, one acre of land could produce approximately 1,800 kilograms of leaves. The intensive production of mulberry leaves allowed small silk growers to purchase leaves without worrying about the long-life cycle of the trees or the possibility of running short of food for their silkworms. The “mulberry embankment and fish pond” system required digging fishponds, building embankments, buying fish and planting mulberry trees, all of which required more resources and strength than ordinary families had. Therefore, the spread of this model benefited from loans provided by local noble.

This intensification of silk production led to increasing specialization of tasks. The old model of household production was no longer sufficient to satisfy the increasing demand for silk textiles. In 1630, scholar He Qiaoyuan remarked that massive exports brought in silver, and thereby ensured "employment for weavers, potters, and merchants." The emergence of a specialized free labor market for artisans led to increasing urbanization. By the mid-eighteenth century, the total number of people involved in silk production in the Lower Yangtze region alone reached over 500,000, or about 17% of the population of that region. Silk had become a major component of the regional economy.

Reeling Silk from Cocoons, 19th century watercolor

Xingshi hengyan

The development of sericulture enriched many households. In the 17th-century fictional story mentioned earlier, *Stories to Awaken the World*, the Shi family is from an ordinary weaving family. The head of household, Shi, goes to a middleman to sell 4 or 5 bolts of silk made by his family. The middleman checks the quality, suggests a price, the two bargain, and the buyer pays the agreed-upon price. Shi then calculates when he would have enough money to buy another weaving machine, and how much profit could be made from that. In ten years, the story says, he could have about thousand *taels* (a unit of currency) of silver, enough to build a house and purchase more farmland.

Feeding Silkworms, 19th century watercolor

The government largely failed to acknowledge the intensifying urban production of silk. One of the most popular themes in government propaganda, *Pictures of Tilling and Weaving,* depicted silk production as if it were confined to individual households. In this work and others, officials conveyed an idealized picture of peasant families, rather than capturing the reality of silk production that was commercialized and responded to emerging global markets. Since this reality did not follow Confucian teachings, however, the government proved slow or unwilling to acknowledge these realities.

New Spain

Silk Production in New Spain

Before the Spanish explorers arrived in the Americas, Spain had long been home to a silk industry. After the Spanish conquest of lands in the Americas, the new colonial government quickly began sponsoring the production of silk there. As with the mining of silver, the goals followed mercantilist principles of investing in practices that could increase state revenues. Also, similar to silk mining, colonial officials incorporated indigenous populations into the imperial political and financial system.

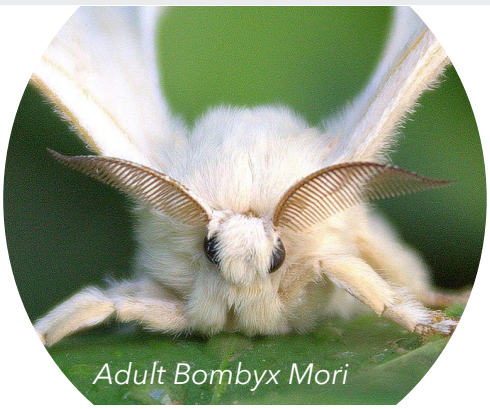
In New Spain, silk production began in earnest in 1536 with a plan by the first viceroy, Antonio de Mendoza (1493–1592), to introduce over 100,000 mulberry trees to the city of Puebla and to recruit indigenous populations as silk producers. Earlier efforts to introduce silk production in the Caribbean, in 1503 and 1517, had failed because the local red mulberry trees were insufficient and because so many indigenous people had died in the face violence and disease. Colonial Mexico proved a more successful location because of its larger population and extensive land for growing black mulberry trees. Puebla was also attractive because it was located on a transportation route between Mexico City and Veracruz, the main port for ships sailing to and from Spain. Many diverse local peoples – whom the Spanish called *Indios* – submitted requests to be trained in silk production. However, we should be cautious before concluding that such a request reflected the desires of indigenous people. Missionaries or colonial officials may have initiated the request. Regardless of where the initial impetus came from, the expansion of silk production allowed the Spanish to incorporate indigenous populations into their economic and political system. Part of the profits from the silk they produced would go to tribute payments to the Spanish crown.

Red Mulberry Leaves (top)
Black Mulberry Leaves (bottom)

Bombyx Mori cocoons

New Spain had several types of indigenous caterpillars, which spun a silk similar to that of the *Bombyx mori* silkworks used in China. These insects produced a so-called Mixtecan silk, which was already an item of trade in the Aztec Empire well before the arrival of the Spanish. But by 1523 the *Bombyx mori* were being imported to Mexico. They soon eclipsed the local species for use in silk production. Still, handkerchiefs made of this Mexican silk were still being manufactured in Oaxaca even in 1803–1804, as mentioned by the German scientist travelling to Mexico, Alexander von Humboldt.

When the Spanish started silk production in Mexico, they first used leaves from the native red mulberry. Later, they introduced black mulberry trees which they used together with the red mulberry to increase production. But because the white mulberry's leaves produced finer silks that dyed more easily, they remained the most desirable on the global market.



Adult Bombyx Mori

In the mid-16th century, silk production spread throughout central and southern Mexico, extending from the present-day state of Michoacán to the Yucatán Peninsula. The areas around the cities of Oaxaca and Puebla had especially strong silk industry because of their environmental suitability and large indigenous labor pools. The *Codex Sierra Texupan*, a sixty-two-page book of community accounts complied in the Mixtecan region of southern Mexico from 1550 to 1564 provides useful evidence about early silk production in New Spain. For example, the Codex explains that 1563 was a bad year for silk because so many worms died prematurely. Yet in this same year, the community still managed to sell 120 pounds of silk to a Spaniard buyer for over 341 pesos. This extensive record of production and trade indicates just how important silk production had become for the daily lives of community members. Rather than being produced within households, Mexican silk raising was more of a community collaboration. A traveler who once visited the Yucatán wrote, "There are many Spanish people with seven or eight houses, which are more than 200 feet long and very wide and high. There are 10,000 to 12,000 in the house. More than a thousand pallets, all of which are silkworm species. When the silkworms start spinning, the silkworm cocoons in the house can be piled from the floor to the ceiling, like a forest of roses."

Red Dye

Thus far, we have learned about how local weather patterns, social conditions, and changing global climate affected silk production in China and New Spain. We can also understand influence of the environment on global silk markets by examining the types of dye adopted by producers in China and New Spain. The difficulty in dyeing silk certain colors affected fashion choices.

The high value on the color red, for instance, stemmed from the rareness of the material needed to make dye and the time-consuming process of dying. In China, the expensive safflower, originally from Central Asia, was widely used for red dye as early as the Northern Wei Dynasty (386–535). Further, the complicated process of using physical and chemical reactions to turn flowers of the saffron plant into a dye only added to the expense. The method recorded in the 6th century agricultural text, *Qimin yaoshu* (*Essential Techniques for the Peasantry*), is described as "killing the flowers." This method was further explained in *Tiangong Kaiwu* (*The Exploitation of the Works of Nature*), a 17th century encyclopedia of craft making techniques, which described ways to produce a diverse array of red dyes. After picking the safflowers, people would grind them and use water to filter them to remove a yellow extract. They then ground the flowers again and used rice water and vinegar water to filter them again. After that, ground flowers were twisted repeatedly in cloth bag. Workers then put the flower extract in a pot overnight. At dawn, workers ground the flowers once again and spread them on a mat to dry. The flowers were finally made into cakes of dye. During the 17th century, red dyes could be found in eighteen sub-colors, while green dyes had fifteen sub-colors.

Because of its association with royalty and its widespread use in the church, the color red was popular across Europe in various types of clothing. When they arrived in the Americas, the Spanish quickly noticed the intense red colors in the clothing worn by indigenous peoples of Mexico, which came from a natural dye derived from a parasitic insect called a cochineal. Cochineal is a white, oval-shaped insect whose body produces bright red juice after the dead bodies of the female insects have been dried and crushed. Cochineal dyes can vary from brilliant scarlet, crimson, or even purple hues. Although cochineals can be found in many places in Latin America, the Spanish most valued the varieties originating in New Spain because the insects were more than twice the size of other varieties of cochineals, and the red color produced by their dead bodies was deeper and more vivid. While the Spanish originally thought that that these insects were the same as the kermes, an insect already used to make red dyes in Europe. But once they realized that it was superior to their kermes, they began importing cochineal dye to Europe in significant quantities.

Alzate Map of New Spain, 1770

Cultivating cochineal dye was labor-intensive. Throughout the process, the insects had to be protected from a variety of lizards, mammals, and birds that ate them. In addition, a tremendous amount of effort is required to keep the nopal segments (the large, fleshy pad parts of the cactus) clean. Indigenous peoples of Mexico used a squirrel or deer tail for this purpose. To protect the young cochineals from the cold, they also sometimes warmed the cactuses with fires, which they build in canopies of wood and straw to shield the plants from heavy rains. Luckily, the cultivation of cochineal does not require fertile farmland, but can be carried out in small-scale cactus forests.

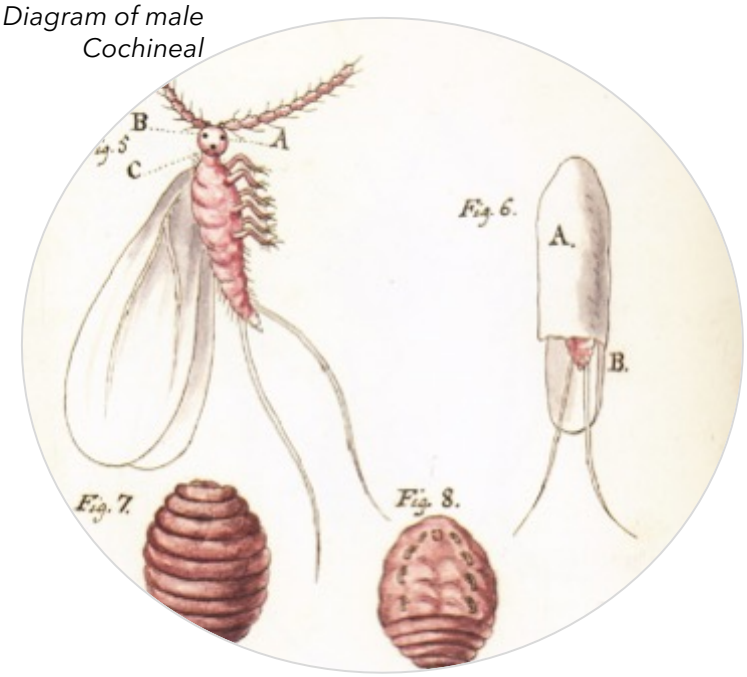
The Oaxaca region was one of the few regions that developed large-scale cochineal plantations for several reasons. First, the warm and dry climate was conducive to cochineal production. The insects were sensitive to more severe weather, like frosts, heavy rains, and droughts more common elsewhere, which could destroy the entire harvest. There was also a large labor pool there to perform this work. During his visit to colonial Mexico, the German scientist Alexander von Humboldt observed that the haciendas around the city of Oaxaca contained between 50,000-60,000 cactus nopals, planted in blocks of about twenty-five meters squares, surrounding mud walls or live hedges gave protection from wind and dust. In addition to these large farms, some other indigenous peoples of Mexico raised cochineal followed a very old practice, which is called "relocating the cochineals." People carried cochineals in covered baskets into the mountains during the summer when it was rainy in the lowlands, allowing the mother cochineals to give birth during the journey. They then came back in winter when the rains begin in the mountains. This relocation protected the cochineal from humidity. The 1775 *Painting of the Benefit of the Great Cochineal in Mexico* collected by the colonial priest and scientist José Antonio de Alzate y Ramírez (1737–1799) consists of twelve watercolor scenes that illustrate the annual cycle of planting and cultivating. While these sources come from later than the materials in the rest of the lesson, both kinds of practices were developed much earlier as well.

Cultivation of Cochineal

To collect cochineal, indigenous workers in New Spain removed the female cochineals from the cactus with a wooden knife. This work was usually performed by the women, who would sit for hours together for this intense work. They then ground the shells into a fine powder which they either steeped in brandy or boiled. They then strained the liquid through a fine sieve or cloth, or they boiled it in a tied-up cloth. Cochineal can be generally harvested three times a year. Each hectare (roughly 2.5 acres) of cactus can harvest about 250 kilograms (550 pounds) of cochineal. After the insects were killed by hot water, they were dried under the hot sun or baked over a fire. When the brick-like dyes were complete, most were shipped to Europe. About 70,000 bugs could produce one pound of dye, which could fetch a high price.

By the eighteenth century, the cochineal industry constituted an important economic pillar for the Oaxaca region. The wealth brought by this production encouraged the government to incorporate indigenous communities under their fiscal and administrative oversight. The first viceroy of New Spain, Martin Enríquez de Almanza (1510–1583), urged indigenous people raising cochineal to "work with diligence."

Diagram of male Cochineal



An indigenous laborer pouring the insects into a hot pot.

To promote the cochineal industry, the Spanish government assumed the role of financier and exporter. Businessmen in Mexico City and Spanish traders provided loans to indigenous farmers. But indigenous workers were also frequently exploited by small, fly-by-night traders, who purchased the dyes as cheaply as possible and made hefty profits reselling them.

Cultivation of Cochineal

Laws dating back to the 1590s sought to prevent cochineal fraud. Shippers were supposed to have receipts and signed statements during their transportation. In the mid-18th century, cochineals were examined by government officials before being shipping out. Inspectors checked to ensure that the cochineals were all mature and that the dye was pure, since mixing cochineal with other materials was a common type of fraud.

During the 16th century, cochineal sales became a major component of the Spanish empire trade. Cochineal shipments arrived in Spain in 1526, in Antwerp in 1552, and England no later than 1569. The colonial government of New Spain encouraged the export of carmine, the name of the dye produced by the insects. By 1600, about 150,000-300,000 pounds of cochineal per year were sent to Spain, most were exported to the Netherlands for use in manufacturing textiles.

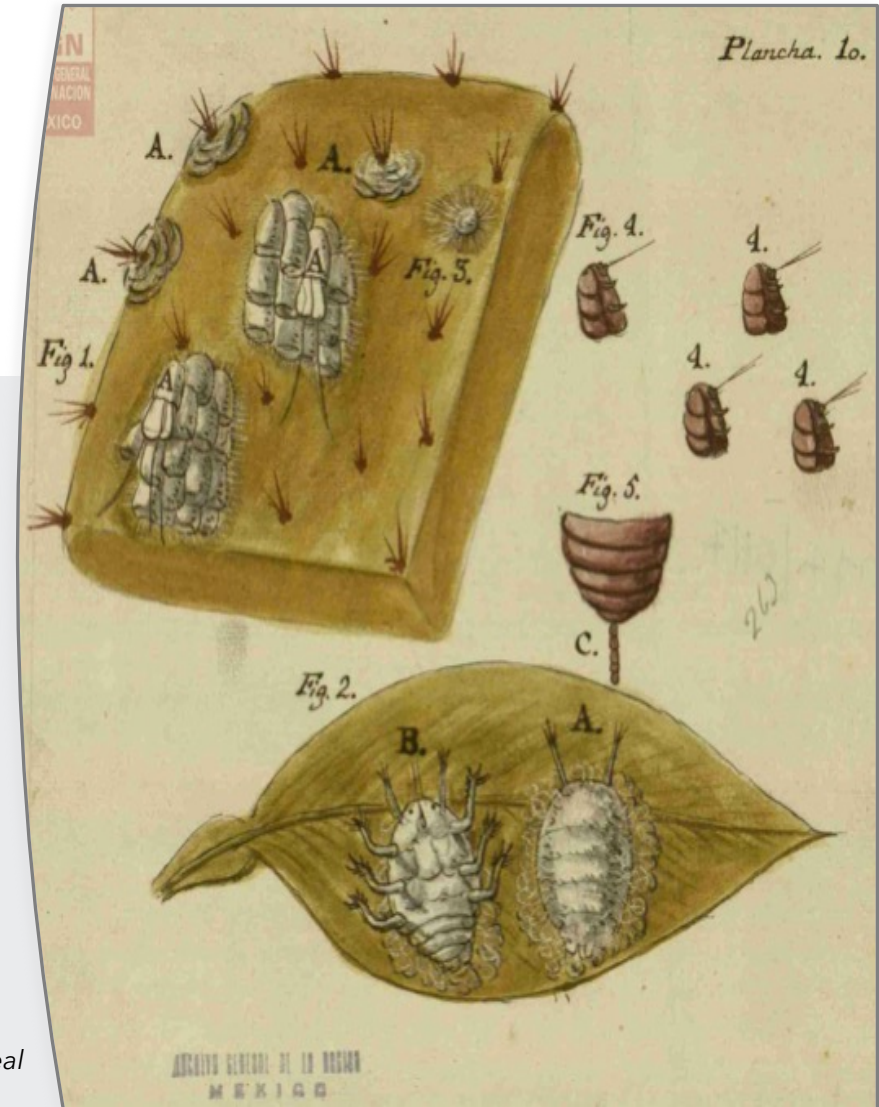
Cochineal was the second most important export from the American colonies, after silver. The importation of the cochineal from New Spain earned Spain huge profits due to a wide demand for red-colored clothing in Europe. In the best years, cochineal production could create a profit of more than 2 million pesos per year.

Explore More:

[Cochineal Insect Dye]

[Cochineal Bugs create Red Dye: A Moment in Science]

[Cochineal Natural Dye Workshop]



Cochineal

Conclusion

The discussion of silk production in China and New Spain indicates that the natural environment played a vital role in the silk industry. Because of the difference in environmental conditions, the global silk fashion acquired local characteristics, consequently influencing the consumers' preference in the silk market.

During the 16th and 17th centuries, far away ecological systems in China and Mexico became interconnected as a result of the Pacific trade. Silkworms were introduced from China to Europe and later brought to Mexico to replace the indigenous ones. The history of mulberry trees, reveals a different story: silk producers in New Spain continued using the black mulberry trees, and still do today. While most of the technology of raising silk was introduced to New Spain by European experts, the circulation and refinement of technology also benefitted from the experience of textile producers in the Oaxaca region. In both regions, silk production involved men and women alike (often more women than men) and required intensive time and energy investment. Furthermore, the silk industry in both places spread with the help of government support and even sponsorship.

Circulation of Technology

The popularity of Chinese silks in Europe encouraged European governments to promote its production both in Europe and in their colonies, both to meet that high demand, but also to reduce their dependence on expensive silks imported from Asia. Expanding silk production in New Spain only fueled increased demands for silk clothing among colonists living in Mexico. This expansion of silk fashion only fueled an even more robust demand for Chinese silk. This will be our topic for the next two lessons on fashion and trade.

Further Reading

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