Chinese Plants in the Persian Agricultural Manual Āsār va Aḥyāʾ, and a Discussion of Rashīd al-Dīn’s Chinese Knowledge and Agricultural Practice

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Abstract: The Āsār va Aḥyāʾ is a manual of agricultural production written in the early fourteenth century by the famous Iranian vizier and scholar Rashīd al-Dīn. Only chapter 6 to chapter 13 of the original work survive, dealing with agriculture and horticulture, and nearly a third of the pages of which are devoted to introducing Chinese plants and related knowledge. In addition to introducing botanical knowledge, the book also covered information on all the aspects of the Yuan dynasty (1271–1368), including the taxation system, monetary system, military system, economy and trade, manufacturing techniques, ethnic customs, food culture, and other fields, providing important materials for research on the dissemination of species, exchange of technologies, communication of ethnic groups, and integration of cultures between China and the world during the thirteenth and fourteenth centuries. Rashīd al-Dīn, the book’s author, took advantage of his identities as a statesman and a businessman to collect rich information about plants all over the world. Motivated by his specific interest in Chinese culture, he included a huge amount of Chinese information in the book. Meanwhile, records in the Āsār va Aḥyāʾ reflect the author’s practice of researching, planting, and cultivating plants, making the book not only a compilation of agricultural knowledge, but also a report that recorded the author’s agricultural practice.

Keywords: Āsār va Aḥyāʾ, Rashīd al-Dīn, Chinese plants, agricultural practice, the thirteenth and fourteenth centuries

Received: September 27, 2021. Revised: May 19, 2022.
This article was translated to English by Yu Yueyuan 俞月圆, and has been copyedited by Nathaniel LaCelle-Peterson.
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面信息，包括赋税制度、货币制度、军事制度、经济贸易、制造技艺、民族风俗、饮食文化等诸领域，为研究 13～14 世纪东西方物种传播、技术交流、民族交往和文化交融提供了重要材料。作者拉施都丁利用自己官员、商人的身份，通过多种渠道搜集到世界各地植物的丰富信息。而他对中国文化的特别爱好，使他将如此多的中国信息著述其书中。与此同时，书中记载还反映出作者研究、种植、培育植物的行为，这使得此书不仅是农学知识的汇编，也是记录作者农业活动的实践报告。

关键词：《迹象与生命》，拉施都丁，中国植物，农业实践，13～14 世纪

1 Historical background and the current research condition of the Āsār va Aḥyāʾ 

1.1 The author and the historical background of the book

Rashid al-Din, author of the Āsār va Aḥyāʾ (Signs and the Living) is known as a famous vizier and historian of the Ilkhanate. He was born in 645 AH (1247 CE) into a reputable Jewish doctor family. The family surrendered to the Mongols when Hülegü Khan conquered Iran, after which Rashid al-Din’s father became a doctor of the court. During the reign of Abaqa Khan (1265–1282), Rashid al-Din also entered the court as an imperial physician. He won the recognition of the emperor, and was entrusted with the responsibility of vizier during the reign of Ghazan Khan (1295–1304). While he was known as a statesman and a historian, Rashid al-Din’s personal scholarly interests went far beyond these duties. He had a lasting passion for various disciplines including theology, medical science, pharmacy, and agronomy, and usually called himself “Rashid al-Din Ğabīb” (literally “Rashid al-Din the Physician”). After Abū Saʿīd ascended to the throne as the ruler of the Ilkhanate, Rashid al-Din’s political opponents accused him and his son Ibrāhim, who had been serving as sharbat-dār (the officer in charge of food) for Öljeitü Khan, of together poisoning Öljeitü when he was seriously ill. Believing that the charge was true, Abū Saʿīd ordered Rashid al-Din, who was at that time seventy-one years old, to be executed.1

While Rashid al-Din’s political career had its ups and downs, his academic life had been shining with brilliance. The family into which he was born and his own experience shaped him into a generous, wise, and knowledgeable person. With a tireless spirit for exploring knowledge, Rashid al-Din held an open and respectful attitude towards the scientific and technological methods, academic thinking, and religious beliefs of other regions and ethnic groups outside the Islamic world, and he actively made contacts with, learned about, and researched them. Rashid al-Din’s

1 For research on the life story of Rashid al-Din, see d’Ohsson (1835, 608–612); Wang (2006, 4–13); Krawulsky (2011, 119–127).
multicultural conception of the world\(^2\) not only benefited from his early years and personal experience, but is also closely related to the era and the environment in which he lived. In the thirteenth and fourteenth centuries when Mongols ruled the Asian continent, China and Iran had maintained friendly political relations. Communications and exchange between the two countries emerged with unprecedented frequency, and the two ancient cultures influenced each other in every aspect. This phenomenon began at the beginning of the Mongol conquest of western regions, and by the time of the reign of Ghazan Khan and Öljeitü Khan, when Rashid al-Din was active, Chinese elements had become culturally symbolic in a way no longer foreign to Iranian elites. Against such a historical background, Rashid al-Din developed a keen interest in Chinese culture, and engaged in research and practice with great enthusiasm. He produced a number of works related to China, the most famous of which is undoubtedly *History of China* in his masterpiece *Compendium of Chronicles* (*Jāmiʿ al-Tavārīkh*). In addition, the part of the genealogy of the Chinese in the *Five Genealogies* (*Shuʿab-i Panjgāna*), *The Treasure Book of the Ilkhan on Chinese Science and Techniques* (*Tanksūqnāma-yi Īlkhān dar Fumīn-i ʿUlūm-i Khatāyi*), and the Āsār va Aḥyāʾ are also texts focused on Chinese culture.\(^3\) In these writings, Rashid al-Din introduced information on Chinese technology with great passion, even repeating, in various works, some knowledge that he was especially interested in.

The Āsār va Aḥyāʾ to be introduced in this paper is a manual of agricultural production that he compiled, which is rich in a diverse range of content and contains a lot of Chinese knowledge. According to the table of contents of the book preserved in Rashid al-Din’s *Collection* (*al-Majmūʿa al-Rashidiyya*), the original Āsār va Aḥyāʾ had twenty-four chapters in total, covering various aspects of agricultural production including meteorology, soil science, farming, irrigation and drainage engineering, plant breeding, plant cultivation, fertilizer, entomology and pest control, poultry rearing, cash crop cultivation and utilization, mineralogy, and architecture. In addition to describing botanical knowledge, Rashīd al-Dīn also recorded information on all the aspects of Yuan China to the best of his knowledge, including the taxation system, monetary system, military system, economy and trade, skills and technique, ethnic customs, food culture, and other fields, making the work an encyclopedia that reflects dissemination of species, exchange of technologies, communication of ethnic groups,

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\(^2\) Professor Christopher P. Atwood (2013, 224), scholar of Mongol studies, has commented on Rashid al-Dīn that “This precocious multiculturalism is a large part of Rashid al-Dīn’s high reputation today. Although operating with texts, not field work, he does share with anthropologists and ethnographers today a belief that anyone wishing to understand the full experience of humanity must at some level accept on their own terms the account other cultures give of themselves. This acceptance gives his work unique value among all other foreign accounts of the Mongol Empire.”

\(^3\) For details, see Wang (2006, 35–49).
and integration of cultures between China and the world during the thirteenth and fourteenth centuries (the Mongol-Yuan period). However, as so far there has been no translation of the Persian text Āsār va Aḥyāʾ into any other language, it is very difficult for historians to study and make full use of it. Translating and annotating this encyclopedic text is thus valuable and meaningful work, a highly promising source for historical research.

1.2 The discovery and research of the Āsār va Aḥyāʾ

For a long time, this agricultural monograph had been thought of as lost, and only its title and chapter headings were known from the list of contents in Rashīd al-Dīn’s Collection (Figure 1). The French Orientalist É. Quatremère was the first to pay attention to the book, describing it in his introduction to History of the Mongols of Persia (Histoire des Mongols de la Perse) published in 1836. The Russian Orientalist I. P. Petrushevsky (И. П. Петрушенский) (1965, 33) also introduced the work in 1960, describing it as a “natural encyclopedia of medieval Iran,” in Agriculture and Agrarian Relations in Iran in the Thirteenth to Fourteenth Centuries (Земледелие и аграрные отношения в Иране 13–14 веков). The first one to publish Rashid al-Din’s text itself was the Iranian scholar Najm al-Dawla. Among the four Iranian agricultural works that he included in A Collection of Persian Works on the Science of Agriculture and Horticulture (Majmūʿa-yi ʿUlūm-i Īrānī dar Zirāʿat va Filāḥat va Bāğhānī va ghayra) published in 1905, the one which entitled ʿIlm-i Filāḥat va Zirāʿat (The Science of Agriculture and Farming) was actually the Āsār va Aḥyāʾ. Najm al-Dawla, however, was unaware that this was the work of Rashid al-Din, only writing that the author was “a learned and practical man, a traveler in the time of
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Ghazan” (ta’līf-i shakhsī ’ālim va ‘āmil sayyāhi dar ‘ahd-i Ghazan) (Rashid al-Din [n.d.] 1989, “Muqadama,” 15–16). It was not until the Iranian philologists M. Sutūda and Ī. Afshār compared the text against two other extant copies of the Āṣār va Aḥyāʾ that they realized that the text published by Najm al-Dawla was actually an abridgment of the Āṣār va Aḥyāʾ. The two scholars then collated the three copies and published the collated edition of the book in 1989.

The three transcripts that Sutūda and Afshār used to produce their collation are: (1) the copy preserved in Kitābkhāna-yi āyat allah al-ʿazmī shahāb al-dīn najīfī marʿashi, which is the oldest surviving copy and was the master copy the collators used in collating; (2) the lithographical copy published by Najm al-Dawla; and (3) the copy preserved in the National Library of Iran (Kitābkhāna-yi Millī). Unfortunately, all three transcripts are incomplete, being either abbreviated or in fragments, and in total only preserving the original work from chapter 6 to chapter 13, which discusses agriculture and horticulture. Before the beginning of the main text, the collators made clear that the original manuscript was not divided into chapters. In order to make it clearer and more convenient for readers to find what they are looking for, the collators themselves divided the extant texts into five chapters, namely (1) knowledge of plants; (2) knowledge of grafting and fertilization; (3) knowledge of barley, wheat, millet, rice, and sorghum; (4) knowledge of beans and related crops; (5) knowledge of foraged plants, vegetables, and aromatic plants.

The collation of the Āṣār va Aḥyāʾ by Sutūda and Afshār is by far the best edition of the book. The collated work attracted the interest of historians from various countries soon after its publication. The British Iranologist A. K. S. Lambton (1988, 158–184) used this work of Rashid al-Din in his study of Iran’s medieval agricultural history, and later (1999) published “The Āḥūr wa Aḥyāʾ of Rashid al-dīn Faḍl Allāh Hamadānī and His Contribution as an Agronomist, Arboriculturist and Horticulturalist,” which made a detailed excerpt of each chapter of the book, translated and with a commentary, in order to discuss the development of agriculture in Iran during the thirteenth and fourteenth centuries. Thomas T. Allsen (2001, 116–121), an American historian on the Mongol Empire, made outstanding use of the book to study the history of exchange between China and Iran during the thirteenth and fourteenth centuries. His book Culture and Conquest in Mongol Eurasia uses the record of Chinese plants in the Āṣār va Aḥyāʾ to demonstrate the spread and influence of the Chinese diet in Iran, and speculates on the relationship between Rashid al-Din’s book and the Chinese agricultural work Collected Essentials of Agriculture and Sericulture (Nongsang jiyao 农桑辑要). In the eighteenth chapter of Japanese historian of the Mongol Empire Miya Noriko’s (2018, 958–996) “Knowledge” in East and West during the Mongol Period (モンゴル時代の「知」の東西), “Chinese Information in Rashid al-Din’s Agricultural Works” (ラシードゥッディーンの農書に見える中国情報), she briefly introduces the plant
species appearing in the Šār va Āḥyāʾ that are related to China and provides annotations. She also translates completely the contents on millet, mulberry, tea, and zatūrānk (a species of aromatic herb).

In China, the Iranologist Wang Yidan 王一丹 (2006, 17–19, 41–47) at Peking University was the first to introduce this work of Rashd al-Dīn to academia. Her Study and Collated Translation of Rashīd al-Dīn’s “History of China” in “Jāmiʿ al-Tavārikh” (Bosi Lashite “Shiji Zhongguo shi” yanjiu yu wenben fanyi 波斯拉施特《史集·中国史》研究与文本翻译) systematically introduced the Šār va Āḥyāʾ. She translated the book’s title as Jixiang yu shengming 迹象与生命 (Signs and the Living), and translated two excerpts, on “tea” and “lotus.” Shi Guang 时光 (2016, 19), another Iranologist at Peking University, also mentioned the agronomic monograph in his study on Rashīd al-Dīn’s translation of Chinese medical works The Treasure Book of the Ilkhan on Chinese Science and Techniques. The author of this paper also has been paying attention to and contributing to research on this work for some years, and has published a series of related articles (Chen 2020a; Chen 2020b; Chen 2021).

2 Knowledge of Chinese plants in the Šār va Āḥyāʾ

Although the original text of the Šār va Āḥyāʾ survives only in fragments, nearly a third of the extant pages are devoted to introducing Chinese plants. The first chapter “Knowledge of Plants” (dar ma’ rifat-i āḥvāl-i dirakhtān) takes up half of the book and mainly introduces important tree species around the world. The chapter can be further divided into two sections, the first of which introduces tree species around the world including those indigenous to Iran, while the second is specifically devoted to Indian and Chinese tree species. This section is also where the most concentrated information on Chinese plants can be found anywhere throughout the book; the accounts of Chinese plants in other chapters are more scattered.

The Chinese plants that appear in the book can be roughly divided into three categories. In the first category are native and special plant species of China that had not been widely introduced into Iran, including tea, lychee, ginkgo, lotus, Euryale ferox, Myrica rubra, and others. The second category includes tropical plants endemic to the South China Sea, growing in South China, Southeast Asia, and India, including coconut, khīyār-i chanbar (Cassia fistula), pepper, white sandalwood, red sandalwood, agalwood, clove gillyflower, betel palm tree, betel vine, sappan wood, and others. Although these plants are not unique or special products of China, since China is their main area of production, Rashīd al-Dīn’s records of these plants also contain a great deal of information about China. The third category lists plants growing in Iran, China, and other parts of the world at that time, some of which had long-ago originated in China and spread to all parts of the world, and others that were introduced to China from
other parts of the world. These included mulberry trees, jujube trees, orange trees, pine trees, millet, mung beans, and others. As the varieties of these plants vary from place to place, it is important to note that in introducing these plants, Rashid al-Din either recorded the knowledge of the Chinese varieties alone, or specifically introduced the other varieties through the special ways in which the Chinese planted and used the plant. His treatment of these three different types of Chinese plants will be described in detail below.

2.1 Plants native to China

The second section of the first chapter “Knowledge of Plants” focuses on recording plants from India and China, introducing in great detail nine plant species that are native to China. The nine plants are tea (chā), lychee (lijū), gingko (likyān), dānìkū (probably “dānnyākū” 丹奈果 or “dāngkū” 棠果, a Chinese species of fruit similar to apple), lotus (link khwā), Euryale ferox (kitū khwā), Myrica rubra (yānkmay), pāpdāza (probably “bāymayza” 白梅子, Prunus mume), and zatīūrānk (a species of aromatic herb). The description patterns and main contents of these nine plants’ accounts demonstrate three characteristics as follows.

The first is that Rashid al-Din recorded these plants’ Chinese names and their Chinese names only. When Rashid al-Din documented other plants, he often used Persian names to describe them. He would also introduce the plants’ names in other languages, including Hindi, Chinese, Arabic, Turkic, and others when necessary (for example, when introducing the varieties of a certain place). When it came to these nine plants that are native to China, however, Rashid al-Din directly called them by their Chinese names as there are no corresponding words in the Persian and Arabic languages. That these Persian words are transliterated from Chinese names also reflects the Chinese origin of these plants (Table 1).

<table>
<thead>
<tr>
<th>The Persian text in the collated edition</th>
<th>Transliteration</th>
<th>Corrections</th>
<th>Corresponding Chinese characters</th>
</tr>
</thead>
<tbody>
<tr>
<td>جا</td>
<td>chā</td>
<td>-</td>
<td>茶</td>
</tr>
<tr>
<td>لیجو</td>
<td>lijū</td>
<td>-</td>
<td>荔枝</td>
</tr>
<tr>
<td>لیکیان</td>
<td>likyān</td>
<td>li[n]kyān/linkyān</td>
<td>灵眼</td>
</tr>
<tr>
<td>دانیکو</td>
<td>DANYKW</td>
<td>dān[n]yākū/dāngkū</td>
<td>丹奈果/棠果?</td>
</tr>
<tr>
<td>لینیک خوا</td>
<td>LNYK khwā</td>
<td>link khwā</td>
<td>莲花</td>
</tr>
<tr>
<td>کوتی خوا</td>
<td>kitū khwā</td>
<td>kitū khwā</td>
<td>鸡头花</td>
</tr>
<tr>
<td>یانکمی</td>
<td>yānkmay</td>
<td>-</td>
<td>杨梅</td>
</tr>
<tr>
<td>پاپدژه</td>
<td>PAPDZH</td>
<td>bā[y]m[ay]z[a]</td>
<td>白梅子</td>
</tr>
<tr>
<td>زه تورانک</td>
<td>za tiū rānk</td>
<td>-</td>
<td>泽(头)兰?</td>
</tr>
</tbody>
</table>
From the plant names above spelled with Persian letters, we can not only restore their original Chinese names, but also access a great deal of implied information. For example, some Chinese words transliterated reflect the specific channels through which Rashid al-Din learned about these Chinese plants. In the past, some scholars speculated that the records of Chinese plants in the Āgār va Aḥyāʾ had mainly referred to Collected Essentials of Agriculture and Sericulture and other officially-compiled agricultural books of the Yuan dynasty. However, records about the term of “lingyan” 灵眼 indicate that Rashid al-Din’s source of knowledge about this plant is by no means agricultural books. Lingyan, whose scientific name is yinxing 银杏 (ginkgo), is commonly known as baiguo 白果, yajiaozi 鸭脚子, lingyan, and baiyan 白眼. It is a very old tree species unique to China, and there are rich ancient Chinese records about it. While it had various common names, the name “yinxing” was the most widely used. Throughout ages, “yinxing” was also the most frequently used formal name of the tree in agricultural books and medical books, followed by “baiguo” and “yajiaozi.” “Lingyan,” on the other hand, was only used in dialects. Collected Essentials of Agriculture and Sericulture called it “yinxing”; Wang Zhen’s Agricultural Treatise (Wang Zhen nongshu 王祯农书) only mentioned “yajiao” 鸭脚 (literally the same as yajiaozi) in addition to “yinxing”; even the great compendium that appeared later, Compendium of Materia Medica (Bencao gangmu 本草纲目), used “yinxing” as the formal name, and included “yajiao” and “baiguo” as common names. None of these books mentioned “lingyan”; it is thus clear this name was not widely used.

So what is the dialect that calls the tree “lingyan”? The agriculture book The Art of Trees (Shuyi pian 树艺篇) compiled in the Ming period cited a claim from Gazetteer of Taicang (Taicang zhi 太仓志) saying that “Yinxing, also named ‘yajiaozi,’ was commonly called ‘baiyan.’” It is also called ‘lingyan’” (Hu [n.d.] 2002, chapter 3:679). The entry for yinxing in Cultivation in Runan (Runan pushi 汝南圃史), written by Zhou Wenhua 周文华 ([1620] 2002, chapter 4:52) of the Ming dynasty, says that “People from the north call it ‘baiguo,’ and people from the south do the same. The dialect of the Wu 吴 calls it ‘lingyan,’ and also ‘baiyan.’” Thus we know that “lingyan” is a name from the Wu dialect. Rather than the formal name yinxing, the name “lingyan” that went into the Āgār va Aḥyāʾ was an uncommon word from the Wu dialect, suggesting that Rashid al-Din did not obtain knowledge of this tree species from any official channel, and not even from the people in the north. It seems more likely that his knowledge was acquired from communication with a person from South China who spoke the Wu dialect.

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4 “银杏，一名‘鸭脚子’，俗呼为‘白眼’，又曰‘灵眼’。”
5 “北人称为‘白果’，南人亦呼之。吴俗皆称‘灵眼’，又称‘白眼’。”
6 The Wu dialect is one of the major dialects in China, and is widely used in southern Jiangsu, Shanghai, most parts of Zhejiang, and some parts of Jiangxi, Anhui, and Fujian.
The second characteristic of Rashīd al-Dīn’s descriptions is a record of the distribution of these plants in China. China has a vast territory and a wide range of plant species. As Rashīd al-Dīn explains their growing areas one by one when introducing these native plants from China, many geographical place names in China were recorded in the book. These names can be classified into two categories. The first are names of larger regions, mainly these four: Khitā or Khīṭāy, Chin, Māchīn, and Manzī. “Khitā” and “Khīṭāy” refer to North China or the Central Plain formerly under the rule of the Jin 金 dynasty, while “Chīn,” “Māchīn,” and “Manzī” refer to South China. Rashīd al-Dīn’s book usually uses “Khitā” or “Khīṭāy” together with “Chīn,” “Māchīn,” and “Manzī” to make a general reference to the whole China. For example, in Khīṭāy and Chīn, there is an extremely large number of mulberry trees (dirakht-i tūt), which produce a large amount of silk. (Rashīd al-Dīn [n.d.] 1989, 36)

It is called “chaʿ” (tea) in the language of Manzī and Khīṭāy. It grows in some places of Manzī—that is, Chin. (Rashīd al-Dīn [n.d.] 1989, 86)

There are many varieties of rice, especially in Hind (India), Khīṭāy, and Māchīn, that no one has ever seen in our country. (Rashīd al-Dīn [n.d.] 1989, 146)

The second category are names of Chinese cities and towns. These include not only city names that were already well-known throughout the world like Zaytūn (Quanzhou 泉州), Khānbālīgh (Hanbali 汗八里, nowadays Beijing), Chundū (Zhongdu 中都, nowadays Beijing), and Hīnsāy (Xingzai 行在, nowadays Hangzhou 杭州), but also place names that had rarely been found in Persian texts, for example, “fū jiū” (Fuzhou 福州), “QM jiū,” “Sin jiū,” “Chīn chīū,” “Būksān jiū,” “Li yāŋk,” and “Kū jiū.” The emergence of these place names greatly enriched Iranians’ knowledge and understanding of Chinese geography and society.

The third characteristic of Rashīd al-Dīn’s accounts of the plants is that his introduction of Chinese plants in the book follows a generally fixed pattern of description. Usually, the introduction starts with etymology of the name (that is, the plant’s name in Chinese), which is followed by its geographical distribution, ecological preference, morphological characteristics (involving knowledge of its body, stem, branch, leaf, flower, seed, and other features), functions and values, and finally concludes with the plant’s cultivation method. Such accounts have already taken on the shape of modern structures of knowledge about flora. The entry of lychee may be cited

The fruit has irritating juice on it, which will make the skin fester if touched. The fruit should be washed with hot water to make its outer skin rot and fall off. The processed fruit looks like a pistachio. From these descriptions it can be concluded that this cannot be a tree of longan, but rather a ginkgo.

7 Miya Noriko (2018, 961) transcribed this name as “longyan” 龙眼 (longan), which was apparently a misinterpretation resulting from not knowing that “lingyan” is a dialectal name. According to the description in the Āṣār va Aḥyāʾ, the fruit has irritating juice on it, which will make the skin fester if touched. The fruit should be washed with hot water to make its outer skin rot and fall off. The processed fruit looks like a pistachio. From these descriptions it can be concluded that this cannot be a tree of longan, but rather a ginkgo.

8 For the appellations used for China in Muslim literature, see Chen (2020a).
as an example to demonstrate Rashid al-Din’s basic description pattern of Chinese plants:

Knowledge of the lychee tree (dirakht-i Lījū)

It grows in some places of Manzi, in the cities of Fuzhou (FRJYN>Fūjū) and Zaytūn (Quanzhou), but not elsewhere. The lychee tree is the size of a chestnut (balūṭ) tree and has a lot of branches. Its trunk and bark are similar to those of a chestnut tree. Its leaves are similar to peach (shaftālū) trees’ leaves, long, thick, with small thorns on the surface, but a bit flatter. The lychee flowers are all yellow and are the size of plum flowers, but the smell is not fragrant.

The fruits are green when they are small. They become half green and half red after ripening and are the size of eggs. Lychees smell better than peaches and taste more delicious and sweeter. The lychee’s skin is very hard, like fish scales.

After the skin is peeled off, however, the lychee’s pulp is white and soft. The smooth black kernel is the size of a knuckle, and is extremely hard. In order to sell lychees, people made them into dried fruit and ship them to different places, just like what they do with apricots (zard-ālū). When lychees dry, their outside is red and the inside is black. Dried lychees are also delicious; they are fragrant and sweet.

When people want to plant lychees, they can plant seedlings around the trees themselves or use seeds to plant them. Of course, grafted plants can also survive.

Lychees can be put into sugar and honey to make preserves (murabbā), just like apples. Lychees are hot in nature. One of its effects is to stop diarrhea.

This fruit grows in the mountains, thickets, and gardens of that country.

In that country, thickets are also properties of people like gardens, in which people build, plow, and fertilize. (Rashid al-Din [n.d.] 1989, 95–96)

This is the only record found so far in Persian historical records about Chinese lychees. The two places that Rashid al-Din recorded where lychees were produced, Fuzhou and Quanzhou, were the most famous areas of lychee production during the Song and Yuan dynasties. Illustrations of Materia Medica (Bencao tujing 本草图经) of Su Song 苏颂 in the Northern Song dynasty says, “Lychees grow in Lingnan 岭南 and in Bazhong 巴中. Today’s Quanzhou, Fuzhou, Zhangzhou 漳州, Jiazhou 嘉州, Shuzhou 蜀州, Yuzhou 渝州, Fuzhou 涪州, Xinghuajun 兴化军, and prefectures and counties in Guangdong 广东 and Guangxi 广西 Provinces all have it. Lychees grown in Fujian 福建 Province are of the best quality, followed by those grown in Sichuan 四川. Those grown in Lingnan are of the lowest quality” (Su [1061] 2017, 537). Litchi Chart (Lizhi pu 荔枝谱) written by Cai Xiang 蔡襄 ([1059] 1273, folio 1) also says, “In Fujian

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9 The collated Persian edition used “FRJYWN,” which Allsen (2011, 120) believes is obviously “Fu-chou” (Fuzhou 福州).
10 Here there is another sentence in the original text: “bar hamān mūjib tūlānī mi-bāshad.”
11 “荔枝子，生岭南及巴中，今泉、福、漳、嘉、蜀、渝、涪州、兴化军及二广州郡皆有之。其品闽中第一，蜀川次之，岭南为下。”
Province, only four prefectures have them [lychees]. Fuzhou has the most, while Xinghuajun has the most peculiar ones. Quanzhou and Zhangzhou were also famous [for lychees] at that time.”  

The account in *Wang Zhen’s Agricultural Treatise* of the Yuan dynasty agrees with the record left by Song scholars (Wang [1313] 1956, chapter 9:96). Thus it can be seen that the names recorded by Rashid al-Din as places of lychee production are accurate.

It is also notable that Rashid al-Din recorded two ways in which the Chinese processed lychees: one method is to expose fresh lychees to the sun to make dried lychees, while the other is to make them into preserves. Both methods can be found in Chinese historical literature. *Illustrations of Materia Medica*, for example, notes that “*Futang* 福唐 (in Fujian Province) annually pays tribute in simply-dried lychees (*bai pu lizhi* 白暴荔枝) and candied lychees, both of which were regarded by the emperor as precious fruits” (Su [1061] 2017, 537). According to Cai Xiang’s *Litchi Chart*, dried lychees could be produced with two methods. In the “method of the red and the salt” (红盐之法), “people soak hibiscus flowers in salt plum brine to get red pulp. Then they soak lychees into it, and dry them in the sun. The fruits will become red in color, and sweet and sour in taste, and can last three or four years without rotting, so that it will be convenient to transport them as tribute or as commodities.” However, he also reported that the dried lychees made with “method of the red and the salt” were “absolutely not of the pure taste” (绝无正味), while the other kind “that have only been exposed to the sun (bai shai zhe 白晒者) are of the pure taste” (白晒者正尔). The so-called “*bai shai zhe* 白晒者” are lychees that have been simply dried without any additional ingredients, which is exactly the “*bai pu lizhi*” in *Illustrations of Materia Medica*. Cai Xiang ([1059] 1273, folio 4) lists the steps of this second method as follows: “Dry [the fruits] in the hot sun, till the kernels are hardened. Store the fruits in urns, seal them for a hundred days, which is called *chu han* 出汗 (lit. ‘to sweat’). Those that have exuded moisture can last long; otherwise they will rot in the next year.” For preserved lychees, Cai Xiang’s ([1059] 1273, folio 4) *Litchi Chart* also records the production method: “Peel off the skin of fresh lychees, squeeze out the juice, and boil them with honey. . . . Use half-dried lychees to decoct, the fruits will become yellowish white in color, and delicious and lovable in taste.” *Wang Zhen’s Agricultural Treatise* includes a “method of drying lychees” (shai li fa 晒荔法): “Soon after the lychees are picked, put them on the bamboo sieve to expose them to the sun. After a few days, the color will

12 “闽中唯四郡有之，福州最多，而兴化军最为奇特，泉、漳时亦知名。”
13 “福唐岁贡白暴荔枝，并蜜煎荔枝肉，俱为上方之珍果。”
14 “民间以盐梅卤浸佛桑花为红浆，投荔枝渍之，曝干，色红而甘酸，可三四年不蟲，修贡与商入皆便之。”
15 “烈日干之，以核坚为止。畜之瓮中，密封百日，谓之出汗。去汗耐久，不然踰岁坏矣。”
16 “剥生荔枝，笮去其浆，然后蜜煮之。……用晒及半干者为煎，色黄白而味美可爱。”
change and the kernel will be drier. Bake them with fire, till the kernel becomes very hard. To store lychees, you need to use bamboo cages, and wrap the fruits with bamboo leaves, so that they can be carried to distant places. The lychees that are dried in whole are called ‘li jin’ 荔锦. Those whose skins are peeled off and then boiled with honey will taste like icing sugar. They are called ‘li jian’ 荔煎” (Wang [1313] 1956, chapter 9:96). 17

Processing fresh lychees with these methods can prevent them from deteriorating and decaying so that they can be transported over long distances. In ancient times, it was very difficult to transport fresh lychees produced in the south to North China, including to the Central Plain: “These fresh lychees have never been seen in the Central Plain” (Su [1061] 2017, 537). 18 Wang Zhen ([1313] 1956, chapter 9:96) also said that “fresh lychees are not only never tasted in the Central Plain, but also rarely experienced in Jiangsu 江苏 and Zhejiang 浙江 Provinces. Nowadays the annual tribute from Fujian Province are also dried lychees.” 19 These accounts make clear that in the Yuan dynasty, fresh lychees still could not be transported over long distances; instead, processed dried lychees were the major fruits for long-distance trafficking.

As delicious lychees, even the dried ones, were favored by people home and abroad, they were transported to distant places. Illustrations of Materia Medica says that “the ones that have been dried in the sun can last for years. The taste of quality ones remains the same after they have been transported to Shaanxi or region beyond the Yellow River” (Su [1061] 2017, 537). 20 Litchi Chart says that for dried lychees, “as far as in the regions of the northern ethnic groups, in the territory of the Western Xia, and in the southern and eastern directions when they are transported by boats to Silla (today Korea), Japan, Ryukyu, Täzi, and other places, no one does not like them, and huge sums are paid for them. So merchants sell lychees to wider and wider places, while the fruit is grown more and more by country people” (Cai [1059] 1273, folio 3). 21 Wang Zhen’s Agricultural Treatise makes the same claim. The Täzi here refers to the Persia and Arab region. The overseas trade of exporting dried lychees apparently continued to the time of Rashid al-Dīn. Archaeological discoveries also prove to some extent that this commerce took place—archaeologists found oval-shaped black lychee kernels in the Nanhai No.1 shipwreck (Li 2012), and eleven lychee kernels have been found on the Song ship in the Quanzhou Bay. Some researchers hold that these kernels might have been left behind by the crew after they ate lychees (Quanzhou Maritime

17 “采下即用竹籬朗晒,经数日,色变核干,用火焙之,以核十分干硬为度。收藏用竹笼,箬叶裹之,可以致远。成朵晒干者,名为荔锦。取其肉,生以蜜熬作煎,嚼之如糖霜然,名为荔煎。”

18 “是生荔枝,中国未始见之也。”

19 “非惟中原不尝生荔之味,江浙之间亦罕焉。今闽中岁贡亦晒干者。”

20 “凡经暴皆可经岁,好者寄至都下及关、陕、河外诸处,味犹不减。”

21 “外至北戎、西夏,其东南舟行新罗、日本、琉求、大食之属,莫不爱好,重利以酬之。故商人贩益广,而乡人种益多。”
Museum, Fujian 2017, 29, 61–62). Nevertheless, if we take the textual evidence into consideration, these kernels could also be from dried lychees to be exported. It is absolutely possible that Rashid al-Din tasted Chinese lychees.

It is, however, very unlikely that Rashid al-Din successfully cultivated lychee trees. This is in part as lychee trees grow in a hot and wet environment, a climatic requirement that Tabriz and its neighboring areas do not meet. Additionally, Rashid al-Din did not introduce lychee tree cultivation methods in this section of the book, nor did he reveal any signs of a practice of planting lychee trees.

### 2.2 South China Sea plants

In addition to the nine plant species that are native to China introduced above, the second section of the first chapter of the Āṣār va Aḥyāʾ also recorded more than ten plants grown in tropical areas in South China, Southeast Asia, and South Asia. The author of this paper refers to them in aggregate as South China Sea plants. All these plants had Persian names, indicating that they had been well-known to the Persians. In this book, however, Rashid al-Din also recorded their names in Hindi or in Chinese, which is new information that went beyond what was recorded in Persian texts of previous generations. The table below lists the South China Sea plants recorded in the book that contain information about China.

<table>
<thead>
<tr>
<th>Tree species</th>
<th>Persian names</th>
<th>Chinese names spelled in Persian letters</th>
<th>Corresponding Chinese characters</th>
<th>Geographical distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>coconut</td>
<td>jūz-i Hindi</td>
<td>BADN&gt;yāzū?</td>
<td>椰子</td>
<td>India, Ceylon, Java, Chin, and Hormuz</td>
</tr>
<tr>
<td>purging cassia</td>
<td>khīyār-i chanbar</td>
<td>RZKH&gt;zaw ka</td>
<td>皂荚</td>
<td>India, Ceylon, Java, Chin, and Egypt</td>
</tr>
<tr>
<td>cinnamon</td>
<td>dārchini</td>
<td>kūy si/kūy pī</td>
<td>桂心/桂皮</td>
<td>India and Chin</td>
</tr>
<tr>
<td>pepper</td>
<td>filfil</td>
<td>hūr siaw</td>
<td>胡椒</td>
<td>India, Chin, and neighboring places</td>
</tr>
<tr>
<td>clove gilliflower</td>
<td>qaranful</td>
<td>nīk tīl&gt;tīng hang</td>
<td>丁香</td>
<td>Chin and Java</td>
</tr>
<tr>
<td>betel palm</td>
<td>fūfal</td>
<td>finām</td>
<td>槟榔</td>
<td>Java, Ceylon, India, and Bangladesh</td>
</tr>
<tr>
<td>betel vine</td>
<td>tanbūl</td>
<td>-</td>
<td>Java, Ceylon, and Chin</td>
<td></td>
</tr>
<tr>
<td>white sandalwood</td>
<td>šandal-i sīfid</td>
<td>tālī hang&gt;tān hang/bāyītān hang</td>
<td>檀香/白檀香</td>
<td>Java and Manzi</td>
</tr>
<tr>
<td>red sandalwood</td>
<td>šandal-i surkh</td>
<td>KNK jīn</td>
<td>绛旃/降真</td>
<td>Ceylon</td>
</tr>
<tr>
<td>agalwood</td>
<td>‘ūd</td>
<td>chim jīnk&gt;chim ğīng</td>
<td>沉香</td>
<td>Ceylon and Java</td>
</tr>
<tr>
<td>sappan wood</td>
<td>baqam</td>
<td>sū múq</td>
<td>苏木</td>
<td>India</td>
</tr>
</tbody>
</table>

In addition to providing the Chinese names of these tropical plants growing in
coastal areas, for some, Rashid al-Din introduced their growing regions in China and described the utilization value, transportation, and sales of their products; for others, he recorded their trade as commodities in the countries of the South China Sea.

The entry of red sandalwood specifically recorded the different uses of the tree species’ products in China and in Iran, as well as differences between the varieties that were traded in the two countries:

[Red sandalwood] (ṣandal) is a commodity sold in Khitāy, where it is very popular. It is used as a raw material of incense, which is burned in temples, or during weddings and funerals. It is not well-known in our country. Because they are rarely shipped here, the variety called ṣandal in our country is not called by the same name in that country (China); it is called Khwālī (huālī 花梨) in Khitāy and Manzi languages. Rather than used for burning, it is processed into trays (shīra), stools (ṣandalī),22 handles of maces (dastā-yī chumāq), and others. Its price is cheaper than red sandalwood. (Rashid al-Din [n.d.] 1989, 91)

The word “ṣandal” derives from Hindi words “chandal” or “chandan” (Bīrūnī 1973, English translation 206; Muzaffarzâda 2004, 684), which mean “sandalwood.” After the Persian adjective suffix “-ī” is added, the word obtains the meaning of “chairs and stools” in addition to the adjective meaning of “of sandalwood.” This passage in the book explains how the meaning of “chairs and stools” came into being. Rashid al-Din actually made the distinction here. He first introduced the use of red sandalwood in China, emphasizing its use for burning in rituals as a kind of incense. Sandalwood was closely related to Buddhism in China. It is also called zhantan 旃檀 and zhentan 真檀 in Chinese, which are transliterations of “chandan” in Sanskrit. The Chinese name tanxiang 檀香, on the other hand, highlights its function as a kind of incense.23 In China, sandalwood was used in various fields related to Buddhism, and went beyond that to reach the wider social space of Taoism, Islam, Confucian sacrificial rituals, folk beliefs, and customs and etiquettes. This ritual use of sandalwood, however, did not apply to Iran. Rashid al-Din writes that real sandalwood is rare in Iran, and the wood called “ṣandal” by the Iranians was actually from the tree species known by the Chinese as “huālī.” This kind of wood was processed into articles for daily use including chairs and stools—which were thus given the name of ṣandalī. The huālī mentioned by Rashid al-Din is a kind of wood similar to sandalwood. “Study on Cultural Relic Identification” with New Additions (Xinzeng “Gegu yaolun” 新增格古要论) said “huālī is from Nanfan 南番 (various countries in the South China Sea) and Guangdong Province. It appears purplish red, looks like jiangzhentang 降真香, and also has a fragrant smell. The plants whose texture look like a ghost face are of good qualities and are favored, while those

22 “Ṣandalī” means “chair” in modern Persian, but in ancient times, Iranians did not use chairs; this word usually referred to the footstool in front of the king’s throne.
23 “Xiang” 香 in Chinese means “incense” literally.
whose texture are coarse and dim in color are of lower qualities. People in Guangdong usually use these to make tea or wine cups” (Wang [1459] 2019, chapter 8 “On Exotic Woods: Huali” 异木论・花梨:265). The main use of this wood, then, is to make household implements. Zhao Rukuo 赵汝适 ([1225] 1996, 184) also said in A Description of Barbarous Peoples (Zhu fan zhi 诸蕃志) that “people in Quanzhou always use this wood to make utensils, just like what they do with the huali wood.” This record in the Āsār va Aḥyāʾ reflects the trade situation of the fragrant wood that was grown in the South China Sea areas and shipped to China and Iran, as well as the wood’s different functions in the two regions.

The entry of agalwood in the book records important information about another fragrant wood in the South China Sea trade. Rashid al-Dīn introduced the different varieties and different producing areas of agalwood, which he lists as mainly Ceylon, Java, and Jávī. When the wind was favorable, it would take only four or five days to reach Quanzhou from Jávī by boat. He also vividly described how the Chinese merchant fleet went to the producing areas to purchase agalwood:

The merchants travelling to and from Chin and India hire people to cut down agalwood trees, break their branches and stems into pieces, and throw them into the pools of the sea water so that every piece of loose wood that mixed in the water gets corroded by the sea water and struck by the wave. The stronger those solid wood pieces are, the later they will be eroded by the sea water. This will last for five or six months. Seawater with its waves soon erode the wood pieces, especially the loose ones. Then someone would be hired to keep [the wood pieces], each of which is 10 or 5 man in weight. The small portion left of each wood piece is as hard as rock.

Some of the wood pieces are relatively small. The remaining small pieces are what people know as “agalwood of Jávī” (ʿūd-i Jávī). They can be large pieces, or very small pieces.

When the merchants return, each goes to their own pool and casts nets to catch the pieces like catching fish. Wood pieces, large and small, are all gathered into the net as long as they are in the pool. They were salvaged repeatedly until none is left. (Rashid al-Dīn [n.d.] 1989, 93-94)

Rashid al-Dīn’s description of salvaging agalwood is very vivid. As information about the Chinese merchant fleet going to Jávī to purchase agalwood is rare in historical materials in Chinese, this record provides valuable material for the historical study of the incense trade between South China Sea countries, India, and China.

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24 “花梨木，出南番、广东，紫红色，与降真香相似，亦有香，其花有鬼面者可爱。花粗而色淡者低。广人多以作茶酒盏。”
25 “泉人多以为器用，如花梨木之属。”
26 “Jāvī” is a place that belongs to or is near to Java. It always appears together with Java in the Āsār va Aḥyāʾ, written as “Jāva va Jávī.”
2.3 Other plants

Plants described in this category were grown in many parts of the world. Rashīd al-Dīn not only introduced these plants’ situation in Iran, but also recorded the varieties grown in other countries and their cultivation methods. Entries that involve information about Chinese plants in this category include the mulberry tree (tūt), jujube tree (ʿanāb), orange tree (nāranj), pine tree (ṣanūbar), barley (jaw), millet (gāvars), rice (birinj), and mung bean (māsh). The records are rich and diverse, not only covering knowledge about plant varieties and cultivation, but also reflecting the situation of China in aspects including technology and craft, local customs, and food culture. What is especially valuable is that these records also provide information on the spread of species across Eurasia, as well as the influence of Chinese food culture on Iran specifically.

2.3.1 Mulberry tree (tūt)

In the entry of mulberry tree, Rashīd al-Dīn wrote extensively about how Iran and other places around the world cultivated and utilized mulberry trees. For mulberry trees in China, Rashīd al-Dīn recorded two uses: papermaking and sericulture.

With regard to papermaking, the author said that most of the paper in China was made from the bark of mulberry trees, although the bark of other tree species could also be used to make paper. Rashīd al-Dīn also noted that China consumed more paper than any other country; this was because of the three different uses for paper in China. Firstly, the Chinese wrote on one side of paper only, while people in other countries wrote on both sides of the paper. In addition to making paper with bark of mulberry trees, Rashīd al-Dīn also mentioned that the Chinese would use wood and silk as “paper” for writing, but the “paper” made from silk was very rare, and was an article of imperial tribute. Secondly, the Chinese liked to use paper to wrap utensils and articles. Thirdly, in China, people mainly use paper money “chāw” (chao 钞) for trade. Rashīd al-Dīn was especially interested in the paper money of the Yuan dynasty, which he also mentioned in another work, The Treasure Book of the Ilkhan on Chinese Science and Techniques. In the Āsār va Aḥyāʾ, Rashīd al-Dīn provided a detailed description of the rules for the use of paper money, writing:

The paper notes will be worn out, as they are always passed around in people’s hands. Anyone can take these worn-out paper notes to the government office (Divan)27 and exchange them for new notes. The worn-out paper notes will be no longer used, but be burned. (Rashīd al-Dīn [n.d.] 1989, 37)

The book also carefully describes how the Chinese use mulberry trees to raise

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27 In the Yuan dynasty, institutions that exchanged paper notes were called Pingzhun xingyong ku 平准行用库 and Xingyong ku 行用库.
silkworms and obtain silk:

In Khitāy, the leaves of black mulberry (Khartūt, *Morus nigra* L.) are also given to silkworms that produce silk, but have to be given to them separately from other mulberry trees’ leaves. If the leaves are mixed with other kinds of mulberry leaves, silkworms will get sick as they cannot get used to it. If the leaves of black mulberry trees are given alone, however, silkworms are able to get used to them. This is because “custom is a second nature” (al-ʿādat ka al-ṭabīʿat sāniyyat). One can see that the silk produced in these areas where that tree’s leaves are used are of inferior quality than that produced in other places. (Rashīd al-Dīn [n.d.] 1989, 37)

According to *Flora Reipublicae Popularis Sinicae* (Zhongguo zhiwu zhi 中国植物志), the main variety of mulberry tree native to China is the white mulberry tree (*Morus alba* L.), which provides an excellent food source for silkworms because its leaves are large, thick, and juicy. The black mulberry tree, on the other hand, was native to Iran, and its leaves can also be used to feed silkworms. Today in China, black mulberry trees are mainly grown in Xinjiang (Editorial Committee 1998, 9, 11). This record of Rashīd al-Dīn shows that by the Yuan dynasty black mulberry trees had been grown in China, and their leaves were used to feed silkworms.

As for how to grow and use the black mulberry tree, the book explains,

Black mulberry wine (sharāb-i khartūt) is very good and customary in Chin area. If people cook the wine with sugar (qand), it will be healthy and tasty. Even for the sake of saving costs, adding syrup (dūshāb) to cook will make the wine beneficial and tasty as well. (Rashīd al-Dīn [n.d.] 1989, 38)

The “sharāb-i khartūt” is suspected to be a misspelling of “sharbat-i khartūt”; as the drink is decocted with sugar, it should be sharbat (舍里八), which was also transliterated as “舍儿别,” “舍利别,” “摄里白,” or called “渴水,” and “××煎” (literally “the decoction of XX”) in Chinese historical literature of the Yuan dynasty. Zhu Zhenheng 朱震亨, physician of the Yuan dynasty commented on this drink that “while [sharbat’s] taste is sweet and delicious, its nature is not neutral and peaceful. *Jinying jian* 金楧煎 (sharbat of Rosa laevigata) reduces urination, while *xing jian* 杏煎 (sharbat of apricot), *yangmei jian* 杨梅煎 (sharbat of waxberry), *putao jian* 蓦桃煎 (sharbat of grape), and *yingtao jian* 楳桃煎 (sharbat of cherry) stimulate heat in the stomach. When the heat accumulates, the harm of damp-heat can be beyond what language can describe. Only *sangshen jian* 桑葚煎 (sharbat of mulberry) is harmless, and can quench one’s thirst. [Drinking] other delicious drinks [is] just for fun, but will hurt the body” (Chen 1989).28 This advice also reflects that sharbat made from mulberries was very

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28 “(舍利别)味虽甘美, 性非中和。且如金楧煎之缩小便, 杏煎、杨梅煎、蓦桃煎、楧桃煎之发胃热, 积而至久, 湿热之祸, 有不可胜言者。仅有桑椹煎无毒, 可以解渴, 其余味之美者并是嬉笑作罪。”
popular in China during the Yuan dynasty.

2.3.2 Jujube (ʿanāb)

Jujube trees are also grown all over the world, and are abundant in Iran. Regarding the cultivation of jujube trees in China, Rashid al-Din writes that in North China and the Uyghur region (Uyghuristân), jujubes were big, good, and delicious, and were of much higher quality than those from other places. This is especially true of the city of Jūjq (called “Chirchin” in other transcripts) in the Uyghur region, where the jujubes are particularly high quality (Rashid al-Din [n.d.] 1989, 40).

This name of “Jūjq” or “Chirchin” is probably “Shechan” 阷缠 in Standard History of the Yuan (Yuanshi 元史), and “Ciarcian” recorded by Marco Polo. Today it is translated into Chinese as “Che’erchen” 车尔臣 (Pelliot 1959, 261–262). It is located in the Qiemo 且末 County in Xinjiang, and abounds with jujubes.

2.3.3 Orange (nāranj)

The Āsār va Ahyāʾ recorded one orange variety grown in China, saying that there is a kind of orange that is sweet in its flesh and not bitter in its skin. It also reported that many orange trees of this kind were reputedly grown in North and South China, so there were many of these oranges there. In their country (Iran), however, this kind of tree was rare, only existing in some places including Bagdad (Baghdād), Kufa (Kūfa), and a few others. Egypt (Miṣr) was said to have some as well (Rashid al-Din [n.d.] 1989, 51).

2.3.4 Pine tree (shanūbar)

The Āsār va Ahyāʾ not only used the Persian name “shanūbar,” but also recorded its Chinese pronunciation “sūnk muq,” which is exactly the transliteration of Chinese characters “songmu” 松木.

The book recorded that the pine trees in China were taller than those in Iran, and also introduced the uses of these trees in China. The first use is shipbuilding. Because pine wood is very light and will not be eroded in seawater, it was used to build the huge Chinese ship “zongchuan” 䑸船 (jūng). The deck, however, was made of cinnamon wood because it is stronger and will not be easily trampled.29

The second use is for pine oil extraction. Pine oil can be used to make lamp oil for lighting. It can also be used to coat ship hulls to prevent seawater erosion (Rashid al-Din [n.d.] 1989, 91–92).

29 Local Records of Ba and Shu (Huayang guo zhi 华阳国志) recorded that “Pine trees and cypresses were planted in all the mountains and around all the temples in Sichuan. Wang Jun 王濬 found this to be against the rites, so he cut them all and burned them off. The pine trees and cypresses were made into ships and boats.” ( “蜀中山川神祠皆种松柏。濬以为非礼，皆废坏烧除，取其松柏为舟船。” Chang [before 355] 1987, chapter 8:440)
2.3.5 Barley (jaw)

Barley was grown all over the world and there were many varieties. The book recorded one variety from China, which is the naked barley from Tibet. Rashid al-Din said:

Barley grown in some places does not have shells, so it is called “naked barley” (jaw-yi birihna). This kind of barley was also grown in Iraq (Irāq) and Qom (Qum). In Sughūrlūq, this kind of barley was cultivated by Tibetan monks (bakhshiān-i Tibit), and its seeds were spread. These Tibetan monks fried the barley in large quantities to eat; they said that there were many such seeds in their homeland (dar vilāyat-i ışān).

(Rashid al-Din [n.d.] 1989, 137)

Sughūrlūq, located in the northwest Iran, throughout history mostly belonged to the provinces of Azerbaijan. “Sughūrlūq” is the name that Mongols used, which means that it has many groundhogs. The place is also known as “Satūrīq.” Today, the place is famous for the “Takht-e Suleiman” (Throne of Solomon). It used to be one of the summer camping grounds of the Ilkhans; the construction of a summer palace started during the reign of the second Ilkhan Abaqa Khan. Archaeologists have unearthed the ruins of this Ilkhanid palace. The valuable record of Tibetan monks growing naked barley at here in the Āṣār va Aḥyā‘ vividly reflects the activities and lives of Tibetan monks, who moved westwards to Iran during the thirteenth and fourteenth centuries, and lived near the Mongol rulers. They not only brought Tibetan Buddhism to Iran, but also Tibetan food customs and the seeds of naked barley.

2.3.6 Millet (gāvars)

The account of millet in the Āṣār va Aḥyā‘ is another passage important for its reflection of species exchange between the East and West. Introducing the varieties of millet, Rashid al-Din writes:

There are many varieties of millet. One of them is “arzan” (foxtail millet), and another one is called “gāvars” (broomcorn millet), which can be further divided into some varieties according to types of its ears. There is also one called “tūk-yi Khitāyī” (literally “tūkī from Khitāy”). (Rashid al-Din [n.d.] 1989, 144)

Here a Chinese millet variety “tūkī” is introduced. “Tūkī” is actually a word from Turkic. The eleventh-century Compendium of the Turkic Dialects (Dīwān Lughāt al-Turk) by Mahmud Kashgari explained it as “seeds of millet (lubb dukhn) after the bran has been peeled away” (Clauson 1972, 478; al-Kāšgārī [ca. 1074] 1984, 269). The Rasulid Hexaglot compiled during the Yemen Rasulid dynasty in the fourteenth-century explicitly listed the translations of this grain in several languages that were widely-spoken in West Asia at that time:

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30 The original text says “Suqūllūn.”

By translating with several other languages, the meaning of “tūkū” as “hulled millet” becomes very clear. The word still exists in the modern Uyghur language, where it is defined as “millet or glutinous millet that has been milled” (碾过的小米、黄米) (Xinjiang Uygur Autonomous Region 2006, 336; Liao and Ma 2006, 356). Rashid al-Din also introduced the utilization of this millet from China and its introduction into Iran, writing:

In Khitāy, tūkī is used to fatten livestock (chahār-pāy). People mainly use Tūkī in place of barley to feed livestock. Tūkī fattens them better. There was little tūkī in our country before. The Khitans brought it from Khitāy to Marv (Marū), and sowed it there.

When some of the Khitans were settled in Khoy (Khūy), they grew it there, and it multiplied. At this time they have carried it from there to Tabriz (Tabrīz) and other districts, and it has spread. (Rashid al-Din [n.d.] 1989, 145)

Here Rashid al-Din’s account outlines the route of Chinese varieties of millet introduced to Iran: The Chinese people brought millet seeds to Central Asia, from where were then introduced to Iran. The “Marv” mentioned above is a famous city of Khorasan, located on the Great Khorasan Road. Heading northeast from Marv, one would reach the Amu River, on the other side of which was situated the renowned Central Asian city Bukhara (Le Strange 1905, 397). The Chinese people of Marv must have come from Transoxiana, and millet also must have traveled from Transoxiana to the Khorasan area. The Chinese people had a long history of living in Transoxiana, beginning with the large-scale migration of the Chinese people to the area which is attributable to the establishment of the successive rule of the Qarakhanid and the Qarahhitay in Central Asia. By the time of the Mongol army’s western expedition, the settlements of Chinese people and their agriculture in Transoxiana were already of a very large scale. After the Mongol conquest, Transoxiana was repeatedly ransacked, and in the most serious episode of slaughter the Ilkhan Abaqa invaded the area to the north of the Amu River, captured a great number of people of Bukhara and Khwarezm and sent them to Khorasan, and then destroyed Bukhara by fire, leaving no living creature there for seven years (Rashid al-Din [1300–1310] 1999, 536–537). This was the largest migration of Transoxiana’s people to Khorasan; it was probably during this migration that the Chinese people brought the millet seeds of China to Iran. Meanwhile, the city of Khoy in Rashid al-Din’s account is an important agricultural town in northwestern Iran. The city is famous for its Chinese residents. Just over one hundred kilometers away from Tabriz, the capital of the Ilkhanate, Khoy served as the granary.

31 Mustawfī Qazvīnī (1915, 84–85) recorded in his Nazhat al-Qulūb that the local residents were fair-skinned and beautiful-looking of Khitan descent (“Khitāy nizhād”).
of the Mongol stronghold. The Chinese people in Khoy grew millet, which could also provide the Mongols with provisions.

In addition to the Chinese millet variety “tūkī,” the Āsār va Aḥyāʾ also introduced another millet variety from the Mongolian Plateau:

There is also a kind of millet in Mongolia (Mughūlistān). When the Mongols went on campaigns to remote places where they might have to stay for one or two years, the journey was long and it was barren along the way. The weak army could barely subsist. By reason of the poverty of the lands and territories or lack of transportation, the army would not be able to obtain enough supply. Each person would then set aside a certain amount of millet as seeds to take with himself. In order to fatten their livestock, they would stop on the way when necessary, and plant the millet seeds. The millet would grow out in forty days. Their food and subsistence would come therefrom until they reached their destination. Thanks to the help of millet the army would be thus provisioned and the country held. (Rashid al-Din [n.d.] 1989, 144–145)

Rashid al-Din introduced the role of millet as the Mongol military food supply in great detail. The source of his information is unknown, but almost identical records can be found in the History of Wassaf (Tārīkh-i Waṣṣāf): “During the years when Kublai was at war with Kaidu, Kublai’s army went on several expeditions to places as far as half a year’s journey, and would sow a kind of millet (‘arzan’) which was called ‘tūkī’ in the wilderness. With the help of rain and sunshine, the millet could grow quickly and would ripe in about forty days. The subsistence would come therefrom” (Vaṣṣāf [1323] 2010, German translation 127, Persian text 133; Lambton 1999, 148).

Traditionally, the Mongols led a nomadic life. In the early stage of Mongol tribes’ development, their military supplies and daily necessities were obtained through hunting and exchange with other tribes or with neighboring ethnic groups. Plundering was also an important way of meeting these needs (Cong 2010, 24–32). Nevertheless, there was still small-scale agriculture in Mongolia. The “Records of the Tartars” (Dada kuan sai 鞑靼款塞) written by Li Xinchuan 李心传 ([1216] 2000, 847) of the Song dynasty records that the shu Dada 熟鞑靼 (the Tartars who lived closer to the Han people) “could cultivate millet, and would eat it after using pottery cooking utensils with flat bases to cook it.”32 Records and Notes of the Mongol Tartars (Meng Da beilu 蒙鞑备录) reports that “one or two places of that country also produce black millet. They also use the millet to cook porridge” (Zhao [1221] 2019, 75).33 From these accounts we know that the grain produced in Mongolia was mainly millet. This is also reflected in the record of John of Plano Carpini’s travels. Carpini described that “they [the Tartars] boil millet in water and make it so thin that they cannot eat it but have to drink it. Each one of them drinks one or two cups in the morning and they eat nothing more during

32 “能种秫穄，以平底瓦釜煮而食之。”
33 “彼国亦有一、二处出黑黍米，彼亦解为煮粥。”
the day; in the evening, however, they are all given a little meat, and they drink the meat broth” (Dawson 1955, 17). Carpini also mentioned that when they were with the Batu Khan, the only thing that they could get from the Mongols was some millet, which they boiled with salt and water (Dawson 1955, 57–58). With the establishment of the Mongol Empire, the tax paid by the occupied agricultural areas became a source for supplying military expeditions. Yelü Chucai 耶律楚材 once suggested to Ögödei that tax be levied to North China to support military supplies. He said that by collecting taxes they “can get 500,000 silver taels, 80,000 pi匹 (a bolt of cloth) of silk, and over 400,000 dan 石 (a unit of dry measure for grain, hundred liters) of millet every year, which will be absolutely enough for military supplies” (Song [1370] 1976, chapter 146:3458). The millet could be transferred as supplies to the army whenever there were military actions. Thus it can be said that millet was the main food for the Mongol army. The Mongol army’s planting millet as recorded by Rashīd al-Dīn and Vaṣṣaf was probably the garrison troops engaging in agricultural activities (tuntian屯田). The Standard History of the Yuan recorded that “when the country was just founded, the army usually went on expeditions. If the army encountered fortified cities and formidable enemies, it would definitely cultivate a piece of land to rely on” (Song [1370] 1976, chapter 100:2558). The frequent military operations and long-distance expeditions of the thirteenth and fourteenth centuries made “tuntian” an important means of providing war supplies.

When introducing millet, the Āsār va Aḥyāʾ also recorded that “several kinds of alcoholic drinks can be made from millet, for example, surma, ṭarāsun, and buza” (Rashīd al-Dīn [n.d.] 1989, 144). All these three names can be found in Chinese historical literature. Ṭarāsun 答剌孙, also known as “大辣酥,” “答剌速,” and “打剌速” in Chinese, is the transliteration of “alcoholic drinks” (jiu酒). Chen Gaohua 陈高华 (1990, 30) believes that in Mongolia, alcoholic drinks made from grain are generally called “dalasu 答剌速.” Cai Meibiao 蔡美彪 (2012, 564–565) once gave a detailed explanation, pointing out that dalasu 答剌速 could be used as a general term for alcoholic drinks in a broad sense, including rice wine brewed by the Han people using grain. Surma (su’erma 速儿麻) is also known as suluma 速鲁麻, suolima 琐力麻, and suo’erma 索儿麻. Fang Linggui 方龄贵 (1997, 82) has proved that surma was made with a foreign brewing method; the etymology of “surma” might then be Turkic, and the word refers to a brewing method from Turkestan. Doerfer (1967, 249–250), a German scholar of Turkic, Mongolian, and Tungus languages, noted that surma was a kind of beer made from wheat, and was a beverage customary in Turkestan. Proper Essentials of Drink and Food (Yinshan zhengyao 饮膳正要) gives a record of the

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34 “岁可得银五十万两、帛八万匹、粟四十余万石，足以供给。”
35 “国初，用兵征讨，遇坚城大敌，则必屯田以守之。”
term “surma, also called bocao 拨槽. It is slightly sweet and piquant in flavor. Its major effect is to benefit vital energy and quench thirst. Drinking too much of it, however, could make one’s body swell and generate phlegm” (Hu [1330] 2009, 208). Here appears the name of another alcoholic drink recorded by Rashid al-Din—būza (bocao). Doerfer (1965, 337–341) made a very detailed explanation of the word in a similar way, pointing out that its etymology is Turkic, and that it was a beer made from various grains. Regardless of any ambiguities in their etymologies, all three alcoholic drinks whose names were recorded by Rashid al-Din were brewed from grain and popular in North China. They were completely different from the liquor that was popular in Iran.

2.3.7 Rice (birinj)

The book introduced to Persian readers that in India, Khitāy, and Māchīn, there were many rice varieties that Iran did not have. Each of these varieties was planted according to its uses and people’s needs. An alcoholic drink “ṭarāsūn,” for example, was brewed using a kind of red rice nonexistent in Iran (Rashīd al-Dīn [n.d.] 1989, 146–147).

Here the “ṭarāsūn” appears again. While the “ṭarāsūn” above was brewed from millet, here it was brewed from rice. The Chinese rice wine (huángjiǔ 黄酒) can be made from rice or millet or other grains. In the Yuan dynasty, rice, especially glutinous rice, was also an important raw material for brewing. The Xiangsha 香莎 glutinous rice from Pingjiang 平江 and the Sumen 苏门 glutinous rice from Huizhou 辉州 were the most famous in the Yuan dynasty, which served as the first choice for the court in brewing alcoholic drinks (Yang 2009, 49–50).

2.3.8 Mung bean (māsh)

In the entry for this species, the author mainly introduces the spread of a kind of Chinese food made from mung beans in Iran.

In Khitāy, people extract starch (nishāsta) from mung beans, make kūkā lāsha from it to cook for eating. The Khitans here (in Iran) also make it. In some places of Mūghān Province, people make this food in large quantities, which is available in all places where mung beans are grown. (Rashīd al-Dīn [n.d.] 1989, 160)

Rashīd al-Dīn used two terms, “nishāsta” and “kūkā lāsha,” to describe this food made from mung beans. “Nishāsta” means starch in Persian, indicating that this is a kind of fenshi 粉食 (food made of starch), while “kūkā lāsha” is from Mongolian, literally meaning greenish elongated strips, suggesting a morphology of thin strips made of mung bean starch. Allsen (2001, 135) explains it as such when discussing “kūkā lāsha”:

36 “速儿麻酒，又名拨槽。味微甘、辣，主益气，止渴，多饮令人膨胀生痰。”
As is well known, the Chinese consume starch mainly in the form of noodles, some of which are made of various kinds of bean flour. This particular dish, while Chinese in origin, is given a Mongolian name, kūkā lāshah.

Allsen translated this food as “blue vermicelli.” Since there was no specific noun in English corresponding to this Chinese food, he uses variously “noodles,” “bean flour,” and “starch” to describe it. But noodles can be made of flour or starch. Flour—a fine, powdery foodstuff obtained by grinding and sifting cereal grain—forms the basis of the food known as mianshi 面食; starch, in contrast, is extracted and separated from the starchy material in tubers, cereals, and beans, and the food made from starch is called fenshi 粉食. So Allsen’s explanation is mistaken when describing this kind of starch-based food with “flour.” Indeed, it is very difficult to use a foreign language to precisely describe a particular dish from a different cultural background. For Chinese readers, however, it would be very clear that “mianshi” and “fenshi” are two totally different categories of food, because of the different ways they are prepared. Mung beans can be made into both mianshi and fenshi. According to Rashid al-Din’s explicit statement that kūkā lāsha was made from starch extracted from mung beans, it can be concluded that the dish he describes is a fenshi rather than mianshi. As the food took the shape of thin strips, we should understand it to be lūdou fentiao 绿豆粉条 or lūdou fensī 绿豆粉丝 (mung bean-starch noodles).

In the Yuan dynasty, starch food made from mung beans was already quite popular. Wang Zhen’s Agricultural Treatise recorded that “mung beans are used in the north in the largest quantity, and are grown by peasants in a very wide area. People use it to cook bean porridge 豆粥, and dried bean 豆饭, make cakes to be roasted, grind and get starch, or as yeast. Sweet but not overly so, it is good at detoxifying medicines, and is thus an excellent crop that benefits mankind. It is interplanted in the south as well” (Wang [1313] 1956, chapter 7:61). Ordinary people, especially those in North China, had mastered the skills of making starch food with mung beans, and so it is absolutely possible that per Rashid al-Din’s report, the Chinese people in Iran would also make starch noodles with mung beans. Many Chinese people migrated to Iran and settled there along with Hülegü Khan in his western expedition. For them, it would have been a common life skill to make starch noodles with mung beans, which were easy to come by. In this way, the Chinese people who relocated to Iran continued their familiar dietary habits in the exotic land.

3 Rashid al-Din’s source of information and his agricultural practice

When Muslim scholars wrote books, especially ones on professional and technical
subjects, the common practice was to follow the old path through the topic and compile the words of predecessors. In the Āṣār va Āḥyā’, in contrast, there are hardly any cliches of previous authors; the book is full of new knowledge and information, overflowing with distinctive details of its time. Motivated by his interest in and love for Chinese culture, Rashid al-Din collected a large amount of knowledge about China that he included in this book. Between the lines, one can see his rich sources of information and experience his enthusiasm in observing, studying, and cultivating Chinese plants.

3.1 Information sources for the knowledge of China in the Āṣār va Āḥyā’

Previously, many researchers believed that the major sources of knowledge about Chinese plants in the Āṣār va Āḥyā’ were the agricultural work compiled by the government of the Yuan dynasty, *Collected Essentials of Agriculture and Sericulture*, and the information about China that Rashid al-Din obtained by talking with Bolad Chingsang (Pūlād Chinksānk), who had come to Iran from China (Lambton 1999, 124; Allsen 2001, 124; Miya 2018, 959). However, after a careful reading of the entire text and an analysis of its contents, one can easily see that the author’s sources of information were richer and more diverse, involving both official and private channels, both books and practice. Rashid al-Din was himself by profession at once a statesman, a businessman, and also a physician. These multiple identities greatly expanded his channels to obtain knowledge and information about the East.

First of all, Rashid al-Din’s identity as a high-ranking official gave him the opportunity to access authoritative official information through official platforms. For example, as has been discussed by scholars before, he learned a great deal of information about the Yuan dynasty’s policy from Bolad Chingsang. The detailed account in the Āṣār va Āḥyā’ of the Yuan dynasty’s paper money policy, tea law, and Kublai Khan’s tree-planting decree all basically derived from this channel. In addition, Rashid al-Din frequently accompanied the Ilkhans and presented himself at the court, which gave him the chance to see the gift awarded by the court of the Yuan dynasty. When introducing China’s musk contract policy, he reports to have seen Chinese musk in the palace with his own eyes:

I once saw [it] in presence of the just king, Ghazan Khan—Allah bless him!—Just like that grass (zatūrānk) is contracted, so is musk. (Rashid al-Din [n.d.] 1989, 103)

Secondly, the community of merchants, especially those engaged in trade overseas, was another important medium constantly providing Rashid al-Din with information about the East. When introducing Chinese plants, the book often mentions how certain

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38 This Persian term originally means “the tax to be paid for contracting and leasing land according to a contract.” In the context of the Yuan dynasty, it was the tax that the national government imposed on some franchised commodities.
plants were traded as commodities, how they were processed into commodities, where these commodities were popular, and to which countries they were transported. This information probably came from the merchants’ knowledge system and actual practice. In particular, for some fruits, Rashid al-Din took the trouble to record, one by one, the methods of how to preserve, process, and store them. For example, in the entry of lychee, he records that “in order to sell lychees, people made them into dried fruit and ship them to different places” ([n.d.] 1989, 96). The entry of “kitū khwā (Euryale ferox)” says: “When the flower is fresh, the skin [of the seed] is soft so [the seed] cannot be transported elsewhere, as it will rot. Break bricks and put them into water, soak the seeds in the brick water for a day or two, and then wash them clean. The outer skin will be very hard then. When transported to distant places, [the seeds] will keep and will not rot” (Rashid al-Din [n.d.] 1989, 99). For another example, the entry of “yānkmay” (Myrica rubra) also explains that “to make dried yānkmay, sprinkle a little salt on them, and dry them in the sun. The fruits can then be transported to other places for sale” (Rashid al-Din [n.d.] 1989, 100). The information on how to process and transport these agricultural products originated from the technical practice of ancient long-distance trade, and goes well beyond the scope of knowledge about plant cultivation. It was more likely obtained from traders than from agricultural books. In addition, Rashid al-Din ([n.d.] 1989, 78) explicitly states in several places that traders often brought him the Eastern plant products that he needed. For example, he writes in the entry of cinnamon that “the wood of which Fanšūri camphor (kāfūr-i Fanšūri) is made have been brought here by merchants more than once. We have seen it, and we have got it.” When talking about areca nut produced in the South China Sea area, he writes: “I have seen the areca nuts in their shells, which were brought by the merchants for me and were very useful to me” ([n.d.] 1989, 84). When it comes to musk of China, he explains: “The deer that has a musk bag (nāfa) is of another kind [that is, the musk deer]. The musk bags obtained from that kind of deer, which are dry and have fur on them, have been brought here by merchants” ([n.d.] 1989, 103).

Furthermore, the Chinese people living in Iran probably also provided knowledge and information on all the aspects Rashid al-Din needed to write this book. When introducing the plants’ properties, the book often describes their medicinal effects, which largely depended on the medical knowledge background of Rashīd al-Dīn himself. In the descriptions of plants native to China, there are also introductions to their medicinal values. For example, the book records that lychees are hot in nature and that one of their effects is to stop diarrhea; that eating raw ginkgo nuts can treat eye pain caused by excessive internal heat; that both lotus seeds and Euryale ferox seeds have the effect of clearing heat; that waxberries can help people who have a fever to quench thirst and bring down the fever, and so on. The emergence of this knowledge where food is used as medicines was inextricably linked to the communication between
Rashid al-Din and Chinese doctors. Rashid al-Din had been exposed to and studied the Chinese medicine, even presiding over the compilation of a monograph *The Treasure Book of the Ilkhan on Chinese Science and Techniques* that translated and introduced *Wang Shuhe’s Rhymes on Pulse* (*Wang Shuhe Maijue* 王叔和脉诀). In the town that Rashid al-Din constructed and donated to (Rab’-i Rashidī), Chinese doctors were invited to work in his hospital. Moreover, the Mongol rulers in Iran had always had Chinese doctors serving them, who without doubt helped Rashid al-Din with his account on the medicinal effects of Chinese plants. Besides doctors, other Chinese people also provided Rashid al-Din with all kinds of information about China. A list of the names of the servants who worked in Rashid al-Din’s town included in his *Deeds of Endowment* (*waqf-nāma*) shows four names with the suffix of “Khitāyī” (meaning “the Khitan”) which indicates that they came from North China. The four men were respectively (1) Ayāz Jāmdār Khitāyī, (2) MADR Khitāyī, (3) Altūn Būqā Khitāyī, and (4) [...]il Khitāyī Bāūrji (Rashid al-Din 1977, 151). The fourth man’s name carries the title “Bāūrji” after it, which means “cook” in Mongolian, indicating that he was a Chinese cook. This fact reminds us that the numerous accounts of Chinese food in Rashid al-Din’s book probably had something to do with this cook. For example, as the process and technique of making mung beans into starch noodles are described so clearly in the book, it is natural for one to speculate that Rashid al-Din’s Chinese cook might have made this food for him and impressed him deeply, prompting him to record it.39

### 3.2 Rashīd al-Dīn’s practice of cultivating Chinese plants

Sentences expressing the author’s personal experience such as “I have seen . . . .” “I have gotten . . . .” “I have planted . . . .” and “I have experimented . . . .” can often be spotted in the *Āṣīr va Aḥyā‘*, which demonstrates to us that the compilation of this agricultural book involved not only collecting previous book knowledge, but also presenting a research report of the author’s participation in agricultural practice. In fact, Rashid al-Din did have the soil and the opportunity to practice agriculture. He once donated to build a town in the suburb of Tabriz that served the functions of scientific research, educational practice, and economic and charity activities. In the town, there were schools, hospitals, pharmacies, pharmaceutical factories, libraries, paper mills, chambers for copying books, mosques, a tomb complex, and other buildings and institutions (Shi 2016, 94), all of which was surrounded by farmland, orchards, and gardens for flowers and trees, growing many rare species that were not found elsewhere (Abbasnejad et al. 2012). As many as 150 gardeners worked in the town (Rashid al-Din 1977, 153; Blair 1984, 87). Rashid al-Din also relocated three hundred cattle and a group of cattlemen from Yazd in central Iran to

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39 Allsen (2001, 135) further speculated that Rashid al-Din’s knowledge of lotus roots and lotus seeds might come from his Chinese cook.
Tabriz, so as to carry urban garbage and waste to Fatḥ ābāḍ⁴⁰ and Rashīd’s town for fertilizer (Qāshānī [ca. 1325] 1969, 116–117). It is safe to say that the Rashīd’s town had the most luxurious botanical garden in Iran at that time, which provided an excellent environment and favorable conditions for him to learn about, experiment with, and cultivate plants from China (Figure 2).

**Figure 2:** An illustration in Arabic ʿJāmiʿ al-Tavārikh, depicting a scene of cultivation (Rashīd al-Dīn [n.d.] 1989, before the Table of Contents).

Records in the Āṣār va Aḥyā’ also confirm Rashid al-Dīn’s practical experience of cultivating Chinese plants. The most obvious example is the introduction of “link khwā (lotus)” in the book:

> The nature of a lotus is similar to that of a water lily (nīlūfar); it is not a tree.

> Lotus also grows in the lakes (nāvur) around Gushtābī in our country. Its root is white, underwater in the mud, and is as thick as a wrist. [The flower] sticks out of the water like a water lily. Even if the water is ten gaz deep or more, it can stick out. Its leaves are as broad as a shield, and its flowers are larger than water lilies, in the colors of white, dark blue, and red. Red flowers are the most. The flower’s appearance is extremely beautiful, and the fragrance very pleasant. I have seen them many times.

> After the flowers wither, its seeds are green color when fresh and immature, and turn black when mature and dry. The seed has a hard skin, and it tastes great. It is called “Linz”⁴¹ (linzi 莲子, lotus seed).

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⁴⁰ This city was adjacent to Tabriz to the southeast.
⁴¹ The original text here says “LLNYR.” Wang Yidan (2006, 43) points out that it should be “linz,” i.e., “lianzi” 莲子 (lotus seeds).
This flower grows all over Manzī and Khitāy. Its roots can be eaten either cooked or raw.

To plant this flower, bury their roots in the mud at the lake’s bottom, or put fresh lotus seeds, which were wrapped in a large mud ball, into water, and they will grow. I have grown it this way.

One of the effects of lotus is to clear away heat. (Rashīd al-Dīn [n.d.] 1989, 98–99)

Rashīd al-Dīn explicitly pointed out in this piece of record that he had seen lotus flowers growing in Iran with his own eyes, and had also cultivated lotus himself. In fact, Rashīd al-Dīn was not the first to record the existence of lotus flowers; earlier Persian scholars had already described the flower, although they generally believed that the lotus flower was a specialty of India. For example, Muḥammad ibn Ahmad Birūnī, the outstanding Persian scholar living in the tenth to the eleventh century, mentioned in the entry of “nilūfar” in his Book on Pharmacy (Kitāb al-Ṣaydāna) that both the root and the seeds of Indian lotus (nilūfar-i Hindi) were edible (Birūnī 1973, English translation 324, Arabic text 344; Mużaffarzāda 2004, 974). The flowers that he discussed were apparently Chinese lotus flowers, which belong to the same species as Indian lotus flowers, rather than Iranian water lilies. In the Āsār va Aḥyāʾ, in contrast, Rashīd al-Dīn did not use the word “nilūfar”; instead, he calls the flower by its Chinese name “link khwā” (lianhua 莲花), and introduces it as a specialty of China. This reflects that Rashīd al-Dīn’s account of lotus flowers was by no means inherited from previous works, but an original record of his own. The fact that he claims to have seen lotus flowers with his own eyes makes us believe that this description of lotus flowers’ appearance and nature is derived from his own observation, and as he adds that he had grown the flower himself, we can understand that Chinese lotus flowers had been transplanted to Iran at that time.

For some of the other accounts of cultivating Chinese plants in the book, it is possible to judge from the content that the author had some firsthand experience even though he does not use explicit expressions such as “I have planted . . . .” For example, when introducing the tea tree from China, Rashīd al-Dīn thus describes its cultivation method:

42 See also Wang Yidan (2006, 43) on translation of these paragraphs.
43 The “Nilūfar” that is native to Iran is the water lily. According to today’s botanical classification, the water lily belongs to the genus of Nymphaea L. of Nymphaeaceae family, while hehua 荷花, lianhua 莲花, and shui furong 水芙蓉 in Chinese all refer to the lotus flowers that are native to China, which belong to the genus of Nelumbo Adans. of Nelumbonaceae family. Simply speaking, the lotus flower from China and the nilūfar from Iran are not of the same species. The most obvious distinctions between the two are as follows: the flowers and leaves of the lotus flower protrude out of the water, while those of the nilūfar float on the water; the lotus flower produces lotus seed pods and lotus roots, while the nilūfar does not; the nilūfar mainly serves ornamental purposes, while the lotus flower can be used for food; the nilūfar grows in many different regions around the world, while the lotus flower is a specialty of China and India.
The tree can be planted by sowing seeds, using cuttings, or planting seedlings, each of which is viable. Using water discharged from the bathroom to water its roots can help the tree to grow quickly and tall. (Rashīd al-Dīn [n.d.] 1989, 87–88)

Here Rashīd al-Dīn specifically mentions that watering tea trees using bathroom sewage water can help the trees grow, which is not a traditional Chinese way of watering and fertilizing. The entry of tea (cha 茶) in Collected Essentials of Agriculture and Sericulture recorded that when cultivating tea trees, “when the trees are seedlings, when the weather is dry, water them with the water that has been used to wash rice” (旱时以米泔浇). For trees older than two years old, “using urine, loose feces, and silkworm’s excrement to water and surround [their roots]” (Shi 2014, 237).44 There are various fertilization methods in traditional Chinese agriculture, including manure, bean cake fertilizer, slag fertilizer, clay fertilizer, sludge fertilizer, ash fertilizer, and others, but there was no such tradition of using bathroom sewage water. This method apparently developed in Iran, which had a well-developed bathroom culture.45 Applying this method to the cultivation of tea trees, however, must have been learned by Rashīd al-Dīn through his cultivation practice, where he transplanted Chinese tea trees to his experimental field and tried to help them grow in the local conditions.

In fact, it is still unclear how many plant species introduced from China were successfully planted in Rashīd al-Dīn’s experimental field. Researchers also have different views regarding how many of the Chinese plants recorded in the Āṣūr va Aḥyāʾ were successfully cultivated in Iran. Nevertheless, at least we can see that Rashīd al-Dīn made such an effort. The records about Chinese plants in this agricultural book were not only the product of transcribing and passing on the knowledge and experience of others, but also Rashīd al-Dīn’s own practice of observing and handling Chinese plants.

4 Concluding remarks

During the era of Mongol conquest, China and Iran became unprecedentedly close as they were both under the rule of the Mongol Empire. The exchange and communication between the two countries not only were manifested in frequent personnel exchange and plenty of material exchange, but also reached into the fields of technology, art, and culture. The agricultural work of Rashīd al-Dīn, the Āṣūr va Aḥyāʾ, was an outstanding work of this era. The book introduces information about plants

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44 “以小便、稀粪、蚕沙浇拥之。”
45 The cesspools of private houses, public bathhouses, and mosques in Iranian towns would be cleaned by cleaners. The contents were mixed with ashes and then stored in fields until they decomposed into an odorless manure that could be sold as fertilizer. See “dung” in Floor (1996, 386–387).
from all over the world, including more than twenty varieties related to China. In doing so, the Āṣār va Aḥyāʾ not only provides precious historical material that reflects the exchanges of plant species across the Eurasian continent, but also records rich details of the plants’ cultivation and production and peoples’ lives in various regions of the world.

Of course, this agricultural work was not only the achievement of the time, but also a great academic accomplishment of the author Rashīd al-Dīn. His academic background in medical science gave him a strong research interest and practical enthusiasm in medicine, pharmacy, botany, and other disciplines. His position as a senior officer serving the Ilkhanid rulers provided him with a most favorable channel to see and learn about materials and information from China and around the world. The wealth earned from the commercial activities of Rashīd al-Dīn and his family offered him the strong financial support necessary to purchase rare items and engage in practice and research. It is all these efforts and investment that helped to make the agricultural work Āṣār va Aḥyāʾ, which perfectly footnotes the exchange of species, technology, and culture between the East and the West during the thirteenth and fourteenth centuries.

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