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# Dissemination and price of cotton in Mesopotamia during the 1<sup>st</sup> millennium BCE

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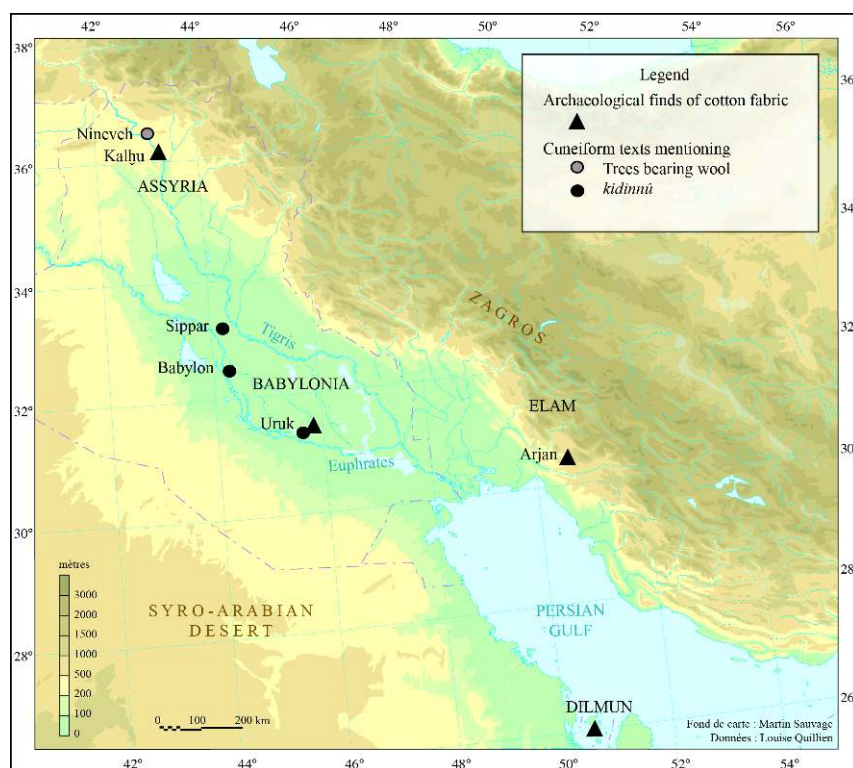
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## Introduction

- 1 In the 19<sup>th</sup> century BCE, a clay box was discovered under the pavement of a room in the temple of Sippar, a city located in the north-west of Babylon, in Mesopotamia. Inside was a carefully kept stone tablet commemorating the restoration of the cult of Šamaš, the main god of Sippar, by the Babylonian king Nabû-apla-iddina (888-855 BCE)<sup>1</sup>. The upper register of the tablet displayed a sculpted depiction of Šamaš' worship. Two clay moldings of the same scene were found with it. One of them bore on its reverse a cuneiform text describing the luxury garments that had to be offered to Šamaš, for the dressing of his statue. This text, dating back to the 9<sup>th</sup> century BCE, contains the oldest known record of the Akkadian term *kidinnû*, for which the translation "cotton" has been proposed<sup>2</sup>.
- 2 The identification of the term for cotton in Akkadian language has long been uncertain. The first scholar to propose *kidinnû* as a possible word for cotton was Zawadzki (2006). Muthukumarán (2016) has since reinforced this interpretation with new arguments. Until then, the only textual reference to the presence of cotton in Mesopotamia was a passage written on a cylinder dated from the Assyrian king Sennacherib (704-681 BCE). In this royal inscription, the king prides himself on having introduced the cultivation of "trees bearing wool" in the gardens of his new unrivalled palace of Nineveh<sup>3</sup>.
- 3 The discovery of the Akkadian word for cotton opens new perspectives for the study of the introduction of this textile fibre in Mesopotamia and its dissemination from India to the Near East. After reviewing the archaeological finds of cotton in Mesopotamia, I will consider the arguments that have been put forward to translate the term *kidinnû* as

cotton (Figure 1). Then, I will study the occurrences of this term in the cuneiform tablets, to show what we know about its use, its price, its provenance and its role in the textile production, before confronting these data to the hypothesis *kidinnû* = cotton. I will then propose a provisional chronology of the introduction of cotton in Mesopotamia from the 9<sup>th</sup> century to the 3<sup>rd</sup> century BCE, based on this hypothesis.

Figure 1: Map of the distribution of evidence about cotton in 1st millennium BC Mesopotamia



## Overview of the archaeological finds of cotton fabrics in Mesopotamia and neighbouring areas during the 1<sup>st</sup> millennium BCE

- 4 The search for the term 'cotton' in Akkadian was encouraged by the discovery of several cotton fabrics dated to the 1<sup>st</sup> millennium BCE, in Mesopotamia and the neighboring areas. In general, very few textile remains have been found in Mesopotamia and the cotton fabrics are even rarer. Due to the importance of sheep farming, wool was the main textile fiber in the region since the 4<sup>th</sup> millennium BCE. Linen was also produced and woven, but much less frequently than wool. It is important to bear in mind that archaeological data only comes from funerary context and is not necessarily representative of the textiles commonly used in everyday life. The discoveries of cotton fabrics must be interpreted in this context.
- 5 The oldest cotton fabric was found in the Assyrian palace of Nimrud (Kalḫu), Northern Mesopotamia. Several burial vaults were discovered under the rooms of the palace, where women of the royal court were lying. Among them, were probably Yabâ, the wife of Tiglath-Pileser III (745-727 BCE) and Ataliyâ, the wife of Sargon II (721-705 BCE)<sup>4</sup>. The

remains of their luxurious garments, adorned with hundreds of golden sequins, were preserved on their bodies. The analysis of the fabrics with an optical microscope revealed that they were linen, with the exception of one of them, which was cotton<sup>5</sup>. Pictures published by the authors of the study prove this result. The fabric was weaved with 15-18 threads per cm (Toray Industries 1996: Pl. 5). The threads were S-twisted and the weave was tabby and its variants (Crowfoot 1995). It shows that at least one cotton fabric was present in Assyria in the 8<sup>th</sup> century BCE, before Sennacherib's attempt to cultivate a cotton tree in his own garden of Nineveh.

- 6 Textile remains were found in Babylonia at Ur and Uruk. Only one of them was identified as cotton, through optical microscope analysis. It corresponds to a fabric discovered in a burial jar at Uruk<sup>6</sup>. No pictures of the microscope observation are unfortunately available today. The burial was found in the "Neo-Babylonian" stratigraphic level (probably first half of the 1<sup>st</sup> millennium BCE, before the Achaemenid and Hellenistic periods), in a residential area, at the south-west of the Eanna temple. This jar did not contain other objects. The fabric was made in a tabby weave, with 13 and 8 threads per cm. Weft and warp were not identified. This find would demonstrate the presence of cotton in Babylonia in a less prestigious context than the royal tombs of Nimrud, but its date is imprecise.
- 7 During the same period or slightly earlier, cotton fabrics decorated with golden sequins were unearthed at Arjan, Elam, in the Zagros foothills, within 50 km of the eastern shore of the Persian Gulf. They were discovered in the tomb of Kiddin-Hutran, a member of the Elamite merchant aristocracy who lived in a period between 650 and 575 BCE (Alvarez-Mon 2005 and 2010). After the plundering of Susa by Assurbanipal (646 BCE), it is not clear whether Elam became a province of the Assyrian and then Babylonian empires or not (Potts 1999, 309-353). The region was divided into principalities before being absorbed into the Achaemenid Persian Empire (539-331). Under Cyrus II, Babylon was integrated into the empire in 539 BCE. Alvarez-Mon (2005) discusses the textile analysis made by Mo'taghd at Arjan and published in Persian. The best preserved cotton textile was made with S-twist, 2 ply threads, in a tabby weave with 19-23 warps and 20-22 wefts per cm (Mo'taghd 1990). Its fringes were adorned with trimming rosettes. This decoration may be indicative of a local manufacturing, with fibers of unknown origin<sup>7</sup>. All the 12 textiles analyzed were in cotton. According to Alvarez-Mon (2005), the Elamite cotton probably arrived from India through the Persian Gulf trade.
- 8 Further south, evidences of cotton were also found in the archaeological site of Qala'at al-Bahrain (modern Bahrain in the Persian Gulf, ancient Dilmun). Seeds were collected in an Achaemenid layer (Tengberg & Moulhérat 2008), but radiocarbon analysis revealed that they were more recent (Bouchaud *et al.* in prep.). Nevertheless, one mineralized cotton textile was also identified, though without certainty, in a bronze sarcophagus dating to the Achaemenid period (mid 5<sup>th</sup>-4<sup>th</sup> century BCE)<sup>8</sup>. The other textile fragments are of linen or hemp. The cotton fabric presents a tabby weave with S-twisted threads. There is no clear evidence that cotton was grown locally, before the mention of cotton cultivation at Tylos (modern Bahrain) by Theophrastus, a Greek scientist of the 4<sup>th</sup> century BCE<sup>9</sup>. Dilmun was an important trading interface in Persian Gulf between Arabia, Mesopotamia and India (Laursen & Steinkeller 2017). The Assyrian kings Sargon II (721-705 BCE) and Sennacherib (704-681 BCE) pride themselves in their royal inscriptions on having included Dilmun into their sphere of influence<sup>10</sup>. During the Neo-Babylonian Empire

(627-539 BCE), Dilmun seems to have been administrated by a Babylonian officer and after 539 BCE, the Achaemenid influence is visible in the material culture<sup>11</sup>.

- 9 In Mesopotamia, later fragments of cotton textiles were discovered in graves of the At-Tar caves, located 80 km west of Babylon. These graves mostly contain woolen textiles and the radiocarbon dating indicated a period between the 3<sup>rd</sup> century BCE and the 3<sup>rd</sup> century CE (Fujii 1987: 219). The cotton textiles haven't been dated precisely.
- 10 It is not yet possible to know whether the cotton fabrics found in the Middle East in the 1<sup>st</sup> millennium BCE were exported from India or produced from locally grown cotton. Cotton exports from the Indian subcontinent were already attested in the 3<sup>rd</sup> millennium BCE (Fuller 2008). In addition to these archaeological findings, cuneiform texts can also provide clues about the presence of cotton in Mesopotamia.

## Summary of the debates on the identification of the Akkadian term for cotton

### Trees bearing wool

- 11 The picture of cotton dissemination through Mesopotamia can be partly reconstructed from the textual data, but it is dependent on the identification of the Akkadian word for cotton. In Assyria, Northern Mesopotamia, the only unanimously accepted designation for cotton to date is the periphrasis “trees bearing wool”, in Akkadian *išu nāš šipāti*<sup>12</sup>, a frequent image in ancient texts, also evoked by Herodotus in his *Histories* to describe the Indian cotton tree<sup>13</sup>. The expression appears in two passages of a cylinder describing the 5<sup>th</sup> military campaign of the king Sennacherib (704-681 BCE) and the building of his palace at Nineveh. Sennacherib describes the exotic plants he had been growing in the garden of his new palace, which may have inspire the legend of the hanging gardens (Dalley 2015): “I planted alongside (the palace) a botanical garden, a replica of Mont Amanus, which has all kind of aromatic plants (and) fruit trees, trees that are the mainstay of the mountains and Chaldea, together with trees bearing wool”<sup>14</sup>. According to the king, the fibers from these trees were collected to make textiles: “They plucked trees bearing wool and wove it into clothing”<sup>15</sup>. This sentence shows that there probably did not exist a word for cotton in Akkadian at the time, because the king used a periphrasis. Indeed, no word for cotton had been identified in the Akkadian language of the Neo-Assyrian period (Gaspa 2018: 49-53). However, the Assyrians knew how to use the cotton fibers to make textiles. The origin of the cotton trees is not clearly indicated in this passage but most commentators have assumed that they came from Chaldea, the southern region of Babylonia, which had been an outlet of the Persian Gulf trade since the end of the 4<sup>th</sup> millennium BCE<sup>16</sup>. The cultivation of the cotton trees was seen as a curious and extraordinary novelty in this period in Assyria. The absence of other mentions of cotton in the numerous administrative texts coming from the Assyrian palaces and dealing with textile production shows that the attempt to cultivate this plant by Sennacherib was later abandoned.

### The *kidinnû* hypothesis

- 12 In 610 BCE, the Neo-Assyrian Empire was defeated by the Babylonian king Nabopolassar, opening the area of the Neo-Babylonian Empire. In the Akkadian language of the Neo-

Babylonian period, the existence of a term for cotton was not proven before Zawadzki proposed the *kitinnû* hypothesis<sup>17</sup>. It does not have an equivalent in Sumerian language, which is a sign of the novelty of the term. This word was previously translated “linen”<sup>18</sup>.

- 13 Before coming down to the arguments supporting this hypothesis, the spelling of this term has to be discussed. Indeed, several writings have been proposed: *kitinnû*, *kidinnû* or *kiṭinnû*. The most frequent spellings of the word in cuneiform texts are *ki-DIN-né-e* at Sippar, Uruk and Babylon and also *ki-DI-né-e* at Uruk. The cuneiform signs have several readings. The sign DIN can be read *din* or *tin*. The value *ṭin* is not attested with certainty<sup>19</sup>. The sign DI can be read *di* or *ṭi*, but not *ti*. Therefore, the spelling *ki-DIN-né-e* excludes the reading *kiṭinnu* and the spelling *ki-DI-né-e* excludes *kitinnu*. The reading *kidinnû* is more probable. The difference with the term *kidinnu* (a word meaning the “divine protection”<sup>20</sup>) would therefore be marked by the long final vowel. Nevertheless, at Sippar, one finds a few attestations of the writing *ki-din-nu* without the marking of the long vowel, in the context where there is no doubt that the word means a textile<sup>21</sup>. Other writings occurred more rarely: *ki-DIN-nu-ú*, *KID-ni-tu<sub>4</sub>*, and *ki-DI-na-a-ta*<sup>22</sup>. It is not certain whether the last two words are the same term.
- 14 The arguments of Zawadzki (2006) for translating *kidinnû* (that he reads *kitinnû*, following Sippar’s spelling *ki-DIN-né-e*) as cotton are the following: 1) There is already a term for linen in Akkadian, *kitû* (Sumerian *GADA*), and the use of the material *kitû* is clearly different from *kidinnû* in the texts dealing with the textile production. The two words are not substituted one for another. 2) The term *kidinnû* can appear as a determinative before a name of textile, like words for wool and linen, expressing a material from which a garment was made. 3) The *kidinnû* is used to replace wool. This material can be given to a craftsmen instead of wool. 4) Lastly, the etymology of the term *kidinnû* (read *kitinnû*) may be linked to the Arabic *quṭn* meaning cotton.
- 15 Muthukumaran (2016) offered new arguments in favor of this hypothesis. After a review of the linguistic evidence, he suggested that the Arabic *quṭn* and Akkadian *kidinnû* (that he reads *kiṭinnû*) would both be of the same foreign origin and might have derived from an Indian root for cotton in South Dravidian language<sup>23</sup>. If we consider the reading *kidinnû*, it would mean that the Indian term would have been interpreted differently in Akkadian (with a D) and in Arabic (with a Ṭ). Muthukumaran also pointed that the cuneiform tablet Darius 533, dated to 501-500 BCE, in the reign of Darius I, may prove that *kidinnû* is a plant, grown locally. This text, probably coming from the private archive of a rich family of entrepreneurs from Babylon, the Egibi, is a list of taxes *šibšu* payable by cultivators to the temple of Nergal, located near Babylon<sup>24</sup>. This tax is levied on agricultural production and usually paid in kind with a part of the harvest. One reads: “4 gur (900 liters) of *kidinnû* : *šibšu* tax”<sup>25</sup>. This text shows that this material is a plant, and not a kind of wool or another animal fiber. This plant cannot be flax, called *kitû*, nor hemp, *qunabu*.
- 16 Muthukumaran (2016) gives a list of 48 cuneiform texts from Babylonia (Uruk, Sippar and Babylon) containing the word *kidinnû*, dated from the 9<sup>th</sup> to the 3<sup>rd</sup> century BCE. He mentions also BM 64557 (Zawadzki 205). One can add the tablet BM 68315 and perhaps Camb 435 (in broken context).
- 17 The word *kidinnû*, like the word for flax/linen (*kitû*), may have been used for different cotton products: the grown plant, raw textile material (cotton fibers), and woven textiles, as the following texts show:

- A plant in Dar 533, quoted above.
- A raw textile material, for instance in Nbn 879:
 

“13 minas of *kidinnû*, 1 mina of red wool for the *šibtu* garment [of the goddess Anunitu] for the dressing ceremony [of the month Tašritu, were given] to Bakûa (the domestic slave of a weaver working for the temple of Sippar)”, (541 BCE, Sippar, Ebabbar temple archive)<sup>26</sup>.
- 18 - A textile in YOS 3 194:
 

“See: the water hand basin and the *kidinnû* of the goddesses [Lady] of Uruk and Nanaya, I had it brought [for] my [lord]”, (6<sup>th</sup> century BCE, Uruk, Eanna temple archive)<sup>27</sup>.
- 19 The unit of measure of *kidinnû* is different in these three cases: a unit of volume for the plant harvest (perhaps the bales of cotton), a unit of weight for the raw material, and without unit or with a number, for the textiles.
- 20 If *kidinnû* is cotton, one has to explain why, in four texts, it is preceded by the determinative of wool (šíg)<sup>28</sup>. Could *kidinnû* have been a textile made of wool or a type of wool? In this case, one would not understand why it would be delivered as a *šibšu* tax levied on agricultural products and why there is no attestation of craftsmen receiving wool to make *kidinnû*. Most of the time, *kidinnû* is written without a determinative that would specify its material. This material is used to make garments that were usually made of wool. The determinative for wool preceding *kidinnû* in rare cases may indicate that the aspect and properties of *kidinnû* were close to wool or/and that both fibers were used together in the same textile. This last hypothesis is based on text Nnb 879 (Sippar, 541 BCE) where a craftsman received 13 minas of *kidinnû* and one mina of red wool to make a *šibtu* garment<sup>29</sup>. Furthermore, *kidinnû* replaced wool, but never linen. If *kidinnû* is cotton, it would be understandable because the properties of cotton fibres are closer to wool than linen: shorter fibres, more flexible, and ready to be woven after cleaning and combing.
- 21 To conclude, *kidinnû* was a material coming from a plant, used to make textile. It is different from linen and wool but its properties are closer to wool. The word is close to terms meaning cotton in other idioms. It appears in the Akkadian vocabulary during the 1<sup>st</sup> millennium BCE. Cotton fabrics were discovered in contemporary sites in Mesopotamia, in funerary contexts. These arguments favour Zawadzki and Muthukumaran’s hypothesis, strengthening the identification of the word *kidinnû* as “cotton” in Akkadian. One text, Dar 533, seems to furthermore attest its local cultivation.

## The *karpasu*

- 22 Nevertheless, it is not the only word referring to cotton. On a late Hellenistic cuneiform tablet coming from the temple of Uruk, dated to 253 BCE, the word *karpasu* appears in an inventory of garments for the dressing of the gods’ statues. Publishing the text, Beaulieu proposed the translation “cotton muslin”, because of its similarity with the Sanskrit word *karpāsa*, which has this meaning (Beaulieu 1989: 71). Therefore, *kidinnû* might be the first Akkadian word for cotton, while the Sanskrit word *karpasu* was introduced later, during the Hellenistic period. This last attestation is for the moment unique, unlike *kidinnû* which appears in 50 texts, possibly 51, most of them coming from the temple archives.

## ***Kidinnû*: a material for the garment of the gods in Babylonian temples**

### **The Sun god tablet**

- 23 The cuneiform tablets provide some information on the uses of *kidinnû* in Babylonian temples during the 1<sup>st</sup> millennium BCE. The first mention of the term appears on the clay mold found together with the Sun god tablet of Šamaš in the temple of Sippar. This document, dated to the 9<sup>th</sup> century BCE, contains a text listing the garments that have to be placed each year on the statue of the god Šamaš during the dressing ceremonies<sup>30</sup>. Beside his numerous garments made of wool and linen, Šamaš had to receive four *šibtu* made of *kidinnû* (written *ki-din-nu*) per year: “4 *šibtu*-garment (of) *kidinnû*, 40 minas (20 kg) their weight”<sup>31</sup>. According to Zawadzki (2006: 95), a *šibtu* is a piece of fabric of unique shape, probably rectangular, which could have been used to wrap a statue or an altar, or as a bedcover. It is also worn by priests<sup>32</sup>. The garments of the gods were usually luxurious. Linen and colored wool made with precious dyes were used to weave and decorate them<sup>33</sup>. All these materials were expensive and were rarely found among the garments listed in inventories or in dowries of the urban elite. Therefore, *kidinnû* was considered worthy enough to adorn the statues of the gods at that time. It may have been less valuable than traditional materials because it was used to make an undergarment, the *šibtu*, worn under the outfit. The outer garments of Šamaš, according to this text, were made of linen or wool (for instance, the linen *ḥullānu* cloak or coat and woolen *lubāru* garment).

### ***Kidinnû* in Neo-Babylonian temple archive**

- 24 Beside this document, other cuneiform texts mentioning *kidinnû* date from the Neo-Babylonian to the Achaemenid periods (627-501 BCE, from the reigns of Sîn-šar-iškûn to Darius I), with perhaps another text dating to the Hellenistic time (281 BCE, Antiochus I, unusual writing <sup>sig</sup>*kid-ni-tu*). They mostly come from temple archives and deal with the manufacturing of the garments of the gods. They come from Sippar (41 texts, perhaps 42) and Uruk (6 texts). Three other texts from Babylon pertain to private archive. The absence of attestations of *kidinnû* during the 8<sup>th</sup> and 7<sup>th</sup> centuries BCE may be due to the lack of available sources, especially temple archives, dated to this period. Indeed, the diachronic distribution of the texts mentioning *kidinnû* reflects the chronological coverage of the cuneiform tablets dataset dated to the 1<sup>st</sup> millennium BCE: most of them date back to the 6<sup>th</sup> century BCE (from the reign of Nabopolassar to the beginning of the reign of Xerxes I), with less specimen dated to the periods immediately before or after.
- 25 The temple archives of Uruk and Sippar contain hundred of texts dealing with the manufacturing of the garments of the gods, which were studied by Beaulieu (2003) and Zawadzki (2006, 2013). These tablets record the material given to craftsmen, their tasks, and the textiles and garments they delivered to the temple once their work was done.
- 26 In the temple archive of Uruk and Sippar, *kidinnû* appears rarely compared to wool and linen. At Sippar, this material is used to make the *šibtu* of the goddess Anunītu, the *šibtu* for the beds of the gods Adad and Šamaš and the *lubāru* of Šamaš. According to Zawadzki (2006), the *šibtu* of Anunītu is probably an inner garment usually made of 16 minas (8 kg)



of white wool and one mina (500 grams) of red wool. Šamaš's *šibtu* is made of 10 minas (5 kg) of white wool and Adad's of 5 minas of white wool (2.5 kg). The *lubāru* of Šamaš is an outer garment made with 20 minas (10 kg) of white wool and 30 shekels (250 grams) of blue-purple wool (Zawadzki 2006: 87-95). In rare cases, *kidinnû* could be used instead of wool to make these garments. According to text CT 56 5<sup>34</sup>, 30 minas (15 kg) of *kidinnû*, probably fibers or thread, and 2 minas (1 kg) of red wool are given to craftsmen to make two *šibtu* for the goddess Anunitu. According to CT 55 834, 10 minas (5 kg) of *kidinnû* are given to make the *šibtu* for the bed of Šamaš, instead of wool: "10 minas of *kidinnû* (...) given to Suqaia, mender, instead of wool"<sup>35</sup>. At least part of the wool for Šamaš's *lubāru* can be replaced by *kidinnû* according to CT 55 831<sup>36</sup>. The *kidinnû* can also be recycled: according to CT 55 834, 10 minas (5 kg) of *kidinnû* are removed from a *lubāru*-garment of Šamaš to make a *šibtu*-cover for his bed<sup>37</sup>.

- 27 The material *kidinnû* is rarely attested in the archive dealing with the manufacturing of the luxurious garments of the gods at Sippar. Quantities up to 30 minas (15 kg) were given to craftsmen to replace undyed wool of specific textiles (*šibtu* and *lubāru*).
- 28 *Kidinnû* is given to temple craftsmen of different specialization: weavers specialized in the weaving of woolen garments, colored cloth weavers (who dyed wool and made colored trimmings and embroideries) and linen weavers-bleachers (specialists working with flax and linen)<sup>38</sup>. There is not a category of craftsmen only specialized in the production of *kidinnû* textiles. It points to the rarity of this material compared to coloured wool and linen.
- 29 One text indicates that *kidinnû* can be dyed: this material is given to a craftsman to prepare the colored threads for the *šibtu* garment of the goddess Anunitu at Sippar:  
 "18 minas (9 kg) of *kidinnû*, one mina (500 grams) of madder, 1 *qû* (1 litre) of alum for the *ṭimūtu* (threads?) of Anunitu [were gi]ven to Bunene-šimanni"<sup>39</sup>
- 30 Bunene-šimanni is specialized in linen textiles (*išpar kitê*), which is unexpected because the dyers were usually the weavers of coloured wool (*išpar birmi*). If *kidinnû* is in fact cotton, it's attribution to a linen specialist can be explained by the nature of the fibre. As far as dyeing is concerned, cotton behaves more like other plant fibres (e.g. flax), rather than animal fibres such as wool. Linen weavers occasionally (though rarely) used dyes, since their work mostly involved bleaching and whitening of linen<sup>40</sup>. Indeed, linen fibres do not absorb the dyes as well as wool. *Kidinnû* was given to wool weavers to make textiles but could also be sent to linen weavers for dyeing. This step, the dyeing of *kidinnû*, appears in only one text; indicating that this fibre was preferred white.
- 31 At Uruk, the *kidinnû* appears in the temple archive in the form of a woven textile, together with a hand water basin, probably used during the ceremonial washing of the hands of the gods. It is mentioned in a letter from a temple administrator of Uruk to his superior, which reads: "The temple is doing well. See: the hand water basin and the *kidinnû* of the Lady of Uruk and Nanaya, for my lord, I had them brought"<sup>41</sup>. This use of *kidinnû* textile together with a hand basin is also attested at Sippar in letter CT 22 35<sup>42</sup>. For this reason, the translation "towel" was proposed<sup>43</sup>. Apart from this "towel?", at Uruk, another garment occasionally made of *kidinnû* is the belt *ḥuṣannu*<sup>44</sup>.
- 32 In general, it appears that *kidinnû* was rarely used in the temples for the manufacturing of the gods' garments, compared to wool and linen. *Kidinnû* was only intended for a few clothes and specific fabrics. According to the Sippar temple archive of the 6<sup>th</sup> century BCE, the injunction to make Šamaš's *šibtu* out of *kidinnû*, stipulated in the 9<sup>th</sup> century BCE

text from Sippar, was not always fulfilled. We may wonder if this material was scarcely available in the temples, or if its limited use was a choice. To answer this question, one can look at other attestations of *kidinnû* in the temples.

## Other uses of *Kidinnû* in Babylonian temples

- 33 It is striking to observe that *kidinnû* was also used by the temples' administration as payment or allowance. At Sippar, the temple officials often gives *kidinnû* to prebend holders (cook, brewer and baker) as part of their remuneration<sup>45</sup>. In Babylonia, a prebend is an income granted in exchange for performing a task in the worship of the gods. These tasks may include the preparation of food and drink offerings (baker's and brewer's prebends), the manufacturing of objects for worship (weaver's, goldsmith's, potter's prebends), or other services (porter's prebend). These functions are prestigious and prebend owners are part of the clergy. They receive an income in kind and/or in silver, which usually include a part of the materials they use for their work (flour for bakers, dates for brewers, etc), but which can comprise other products. The first attestation of *kidinnû* given to a prebend holder dates back to 575 BCE (30<sup>th</sup> year of Nebuchadnezzar II)<sup>46</sup>. When it is dedicated to this purpose, the *kidinnû* is always weighted, like other raw materials, and not counted, like a woven textile for instance:
- 34 "Two minas of *kidinnû*, except for one mina of an earlier (issue) were given to Nabû-aḫḫē-šullim (a brewer), son of Aplā from his prebendary income"<sup>47</sup>.
- 35 This material is also delivered by the temple of Sippar to the crown for the "rations of the king" (*kurummāti ša šarri*), under the reign of Nabonidus<sup>48</sup>. These rations can serve to supply the army. At Uruk, the temple sells *kidinnû* to buy bricks or to supply bowmen<sup>49</sup>. The temple of Sippar also uses *kidinnû* as a mean of payment to buy animals and dates<sup>50</sup>. The text BM 79603 from Sippar is a list of quantities of *kidinnû* sold by the temples, during the year, to different individuals:
- "Kidinnû which was sold in the 6<sup>th</sup> year of Cambyses (524-523 BCE), king of Babylon, king of the Lands: 41 minas of *kidinnû* were sold to Bēl-iddin, son of Balassu, for 13 1/3 shekels of silver. Month Ayaru, 27<sup>th</sup> day. 20 minas of *kidinnû* were sold to Bēl-ittannu, son of Zēriya for 10 shekels. 40 shekels of *kidinnû* [..... x minas of *kid*] *innû* for 2 *pānu* 3 *qa* of sesame [was sold to PN, son of Arad-Bēl. Month. [.....]]"<sup>51</sup>.
- 36 The text is broken, but the preserved portion records at least 61.6 minas (31 kg) of *kidinnû* sold during this one year. Although the temple of Sippar distributed *kidinnû* for various purposes, only one text mentions its purchase: Nbn 439 (546 BCE). The text reports that the temple of Sippar received 1 talent 9 minas (34.5 kg) of *kidinnû* from two merchants for the rent of houses<sup>52</sup>. The quantities of material acquired by the temple are here much more significant than the quantities usually disbursed for prebendary salaries or allocations. They are however on the same scale as the total of *kidinnû* sold by the temple over a year, according to text BM 79603 quoted above.
- 37 Through these various sources, *kidinnû* appears to be a less valuable good for the temples than other textile materials used for the manufacture of gods' garments.
- 38 – *Kidinnû* is given to prebend owners as their remuneration, whereas precious textile materials such as dyed wool were usually not part of the salary of the prebend owner, even for the prebendary weavers who usually received a part of their work material as remuneration<sup>53</sup>.

- *Kidinnû* is sold by the temple, contrary to colored wool made with imported dyes which are never sold.
  - The temples do not purchase *kidinnû*.
- 39 These three arguments tend to show that *kidinnû* was a material of lesser value than dyed wool to the temple. The fact that Sippar temple was selling its *kidinnû* shows either that this material was available in its storage rooms, and/or that it did not have a use for its entire stocks. *Kidinnû* was rarely used to make textiles for the worship, and when it was, it was rather by choice. As we have seen, *kidinnû* was reserved for the manufacture of specific types of clothing, reserved for deities, and often worn as an undergarment under their outfit.
- 40 Although *kidinnû* is attested among private archives, there is no clear evidence of its presence in private context. Text Dar 533 from Babylon mentions *kidinnû* as a tax to be paid to the temple of Nergal, still in an institutional context. The letter TCL 9 117 mentions a belt *Ḫuṣannu* made of *kidinnû*, but this belt pertains to the clothing of priests<sup>54</sup>. The only text with an hypothetic mention of *kidinnû* in private context is the marriage contract CT 49 165: 8, from Babylon, dated to the Hellenistic period (281 BCE). It is not clear however whether we have here an example of the later spelling of *kidinnû* or a different word: <sup>sig</sup>*kid-ni-tu*.
- 41 This type of production model is different from what is observed in the Egyptian Oases, where cotton was cultivated by private owners and not by institutions or the central power (Bouchaud & Tallet forthcoming). It could also be the inherent result of documentary biases induced by the Babylonian sources themselves: private archives thus seldom mention rare or secondary crops (for instance, flax appears in less than ten texts from private archives).

### ***Kidinnû's price***

- 42 The occurrences of *kidinnû* prices in silver show whether it was an expensive product in Babylonia or not. All the data about *kidinnû's* price come from Sippar temple archive (Figure 2). Many inconspicuous parameters, such as the quality of the product or the circumstances of the transaction, must have influenced the prices recorded in the texts. They can help nonetheless in understanding the general value of the material.

Figure 2: List of the price of *kidinnû* at Sippar

Text	Date	Type of sell	minas of <i>kidinnû</i> (1 mina = 500 grams)	shekels of silver (1 shekel = 8.33 grams)	price (shekel of silver per minas of <i>kidinnû</i> )
Zawadzki 2013 n°565 (Nbn 291)	Nbn 1.III.8 (548 BCE)	<i>kidinnû</i> for silver, given by the temple to a craftsman	5	1	0.2
Zawadzki 2013 n°570 (Nbn 439)	Nbn 20.VIb.10 (546 BCE)	<i>kidinnû</i> delivered to the temple for the rent of houses by two merchants.	69	7	0.1
BM 68315	Nbn 24.VIII.13 (543 BCE)	<i>kidinnû</i> given to different individuals by the temple, once against silver	5	2	0.4
Zawadzki 2013 n°580 (Camb 250)	Camb 4.VIII.4 (526 BCE)	<i>kidinnû</i> given to a man, part of the payment for a cow.	15.66	5.33	0.3
Zawadzki 2013 n°577 (BM 79603)	Camb 27.II.6 (524 BCE)	Lists of the quantities of <i>kidinnû</i> sold during the year, against silver or sesame.	41 20	13, 33 10	0.3 and 0.5

- 43 As a comparison, the average price of wool during the Neo-Babylonian period is 4 minas of wool for 1 silver shekel or 0.25 silver shekel per mina of wool. In the attestations dated from Nabonidus' reign, the *kidinnû*'s price is lower, but slightly higher under the reign of Cambyses. Therefore, the price of *kidinnû* is comparable to the price of raw wool, and low compared to dyed wool. For instance, red purple wool imported from the Levant is worth 60 times the amount of raw wool (Quillien 2015).
- 44 If *kidinnû* is in fact cotton, i.e. a new product in Babylonia during the 1<sup>st</sup> millennium BCE, why would it be cheap? Zawadzki and Muthukumaran have proposed to see there the trace of a progressive development in the dissemination of cotton, which went from a rare product at the beginning of the millennia to a more common good during the 6<sup>th</sup> century BCE<sup>55</sup>. One hypothesis also states that this product had been widespread in Babylonia already in the 6<sup>th</sup> century BCE, but cotton remains a rare occurrence in the contemporary texts. Another possibility is simply that this material had no particular added value for consumers compared to flax and wool.
- 45 More than any other textile material, cotton fibers are extremely versatile: they can be spun and woven into both very fine fabrics and ordinary coarser ones. Once the seeds are removed, the fibers also provide an appropriate material for padding. According to Theophrastus, at Tylos (Bahrain) the cotton was used to make both cheap and luxury fabrics<sup>56</sup>. Arrian (Greek writer, 1<sup>st</sup> century CE) reported an observation made by Nearchus, Alexander the Great's navarch, during his travel from the Indus River to the Persian Gulf: cotton was transformed into fabrics, but the Macedonians used the raw fibres to stuff their mattresses and saddles<sup>57</sup>. The *Periplus of the Erythraean Sea*, a Greek account of the travels and trading routes from the Red Sea to Indian coasts dating to the 1<sup>st</sup> century CE, mentions the trade of Indian cotton of different qualities<sup>58</sup>. All these indications show that traded cotton from India could have different forms and could have been valued more or less according to the technique of processing (from a coarse to a fine fabric).

## The origin of the Babylonian *kidinnû*: local or imported?

- 46 Most of the texts do not specify the origin of the *kidinnû*. According to the text Dar 533, the *kidinnû* was cultivated around Babylon, in field belongings to the temple of Nergal, under the reign of Darius (501 BCE). The temple of Nergal charges a quantity of 4 gur (900 liters). This tax is usually levied on date palm and represents a significant proportion of the local harvest: 30 or 40%<sup>59</sup>. If *kidinnû* is cotton, one can easily imagine that the crop was stored in 180 liters bags (1 gur) after harvesting<sup>60</sup>. Are the conditions for cotton cultivation present in Iraq?
- 47 Today, cotton requires a temperature above 15 degrees during its maturation period, sufficient water supplies and dry climate during the two months before the harvest, which in modern Iraq occurs between August and November (data from the United States Department of Agriculture). It is probable that cotton cultivation in Antiquity required less water than modern crops (Bouchaud *et al.* 2018). The climate of Babylonia (South Iraq) is favourable for this culture, and cotton is nowadays grown in Iraq (Ishow 2003, 164). The text Dar 533 lists, beside *kidinnû*, quantities of barley and emmer to be given as a tithe *ešru* or a tax *šibšu* to the temple of Nergal, coming from different localities with a high number of canals names. According to this text, the *kidinnû* plant was well integrated in the irrigated cultivation system.
- 48 The mention of the *kidinnû* harvest is unique to the text Dar 533, which could indicate the rarity of its cultivation in Babylonia. Caution is required on this point, since texts rarely mention secondary agricultural crops. For example, only a few texts evoke the cultivation of flax, despite the fact that this fiber is frequently mentioned in texts dealing with textile manufacturing (Quillien 2014: 272-273). The fact that the temple had been selling its *kidinnû* since the end of Nebuchadnezzar's reign would rather indicate that it was available locally. It is indeed quite rare for temples to purchase imported products from long-distance trade for resale<sup>61</sup>. Furthermore, the temple does not buy *kidinnû*, either because it is available through means other than purchase, or because it does not have an indispensable need for it.
- 49 Nevertheless, it is also possible that *kidinnû* was coming to Babylonia through long distance trading networks. One text goes in that direction, Nbn 439, where the temple of Sippar received 1 talent 9 minas (34.5 kg) of *kidinnû* from two merchants who used to trade imported products<sup>62</sup>. *Kidinnû* is absent from the lists of products imported from the West, but could have potentially come from the East. During the Neo-Babylonian period, trade from India and the Persian Gulf is much less documented, even though it still existed at the time (Graslin-Thomé 2009, Kleber 2017). This would explain, if *kidinnû* is indeed cotton, why its trade is not further attested in the written documentation.
- 50 Cuneiform texts and Classical sources show that Babylonians were in contact with Indian textiles: an undated broken text from Uruk (Neo-Babylonian or Achaemenid period, between 6<sup>th</sup>-5<sup>th</sup> century BCE) mentions a linen fabric called *gandarāsanu*, thus coming from the Indian region of Gandhara<sup>63</sup>. According to Herodotus, Indian soldiers in Xerxes' army wore garments made of 'wool bearing trees'<sup>64</sup>. Based on information only provided by the cuneiform tablets, it is not possible to tell in what proportions the *kidinnû* was produced locally or imported.

- 51 The cuneiform texts seem to reflect an uneven distribution of *kidinnû* in Babylonia. The majority of the attestations come from Northern Babylonia (Sippar and Babylon). At Uruk, in the south, there are only 6 mentions, and it is more often present to designate fabrics rather than raw material. This data cannot solely result from the documentation's availability, because Uruk's archives concerning textile production are numerous<sup>65</sup>. Is it due to the different cultic traditions in the two cities, where garments for the gods had their own specificities? Or is it indicating unequal access to cotton material?
- 52 Given that cotton fabrics from the 1<sup>st</sup> millennium BCE were discovered in Assyria and Babylonia, one may wonder by which route it had been introduced into this region from India. It is possible that cotton reached Babylonia through the trade connecting the Indian coast with the Persian Gulf. Dilmun (Bahrain) and Elam certainly played a role in these exchanges, perhaps as intermediaries or/and outlets, at least from the 7<sup>th</sup>-5<sup>th</sup> century BCE.
- 53 If *kidinnû* is indeed cotton, its presence in northern Babylonia (Babylon and Sippar) combined with the presence of several cotton fabrics in Arjan, could indicate that cotton textiles reached Elam via the Gulf and were then imported to Babylon by overland routes. On the other hand, the cotton fabric found in Uruk may have come from the maritime route, since southern Babylon was an outlet for maritime trade in the Persian Gulf. It is probable that the goods circulated through several intermediaries rather than through a direct exchange mechanism. These different reconstructions remain hypothetical until further evidence is available.

## Conclusion and proposition of a chronology

Figure 3: Summary of the evidences (archaeology and texts)

Place	Date	Source	Context	Summary
Sippar	9th century (888-855 BCE)	Cuneiform text	Copy of an inscription of the temple of Sippar recording Šamaš garments	Among the precious garments that were to be given to Šamaš, a <i>šibtu</i> in <i>kidinnû</i> .
Kalbu	Second half of the 8th century BCE	Textile	Neo-Assyrian tomb of royal women	One cotton fabric, among several linen textiles. Fine fabric, no dye, golden decorations.
Nineveh	704-681 BCE	Cuneiform text	Sennacherib royal inscription	Cultivation of trees bearing wool in the gardens of the royal palace and harvesting of fibres to make clothes.
Elam (Arjan)	650 - 575 BCE	Textile	Tomb of a member of the merchant aristocracy	12 cotton fabrics, adorned with elaborated fringes and golden rosettes.
Sippar	627 BCE	Cuneiform text	Ebabbar temple Archive (Sippar)	Oldest attestation of <i>kidinnû</i> in a temple administrative archive dealing with the manufacturing of the gods' garments at Sippar.
Uruk	"Neo-Babylonian" level (c. 7th-6th century BCE?)	Textile	Uruk tomb (jar)	Fragment of cotton fabric.
Uruk	605-486 BCE (from Nebuchadnezzar to Xerxes)	Cuneiform text	Eanna temple Archive (Uruk)	<i>Kidinnû</i> to make the garments of the gods, for rituals. Letters mentioning sending of <i>kidinnû</i> fabrics.
Sippar	591 - 501 BCE (from Nebuchadnezzar to Darius II)	Cuneiform text	Ebabbar temple Archive (Sippar)	<i>Kidinnû</i> to make the garments of the gods, for rituals, distributions of <i>k</i> . by the temple to various individuals and for the king's rations.
Sippar	546 BCE (Nabonidus)	Cuneiform text	Ebabbar temple Archive	Two merchants deliver 69 minas of <i>kidinnû</i> to the temple of Sippar as a rent for their houses.
Babylon	501 BCE (Dar I, 21st year)	Cuneiform text	Private archive	Unique mention of <i>kidinnû</i> cultivation, at Babylon, levied as tax <i>šibšû</i> for the temple of Nergal.
Dilmun	Achaemenid level 5th-4th century BCE	Textile	Funeral context	A cotton fabric with several superposed layers, loose canvas, 20 threads per cm, without decoration.
India / Achaemenid army	5th century BCE	Text	Herodotus <i>Histories</i> , VII, 65.	The Indian soldiers in Xerxes' army wear cotton clothes.
Bahrain	4th century BCE	Text	Theophrastus, <i>Inquiry into Plants</i> , IV, 7, 8	Mention of cotton cultivation at Tylos (Dilmun) during Alexander the Great's conquest.
Babylon	281 BCE (Antiochus I)	Cuneiform text	Private archive	<sup>66</sup> <i>kid-ni-tu</i> in a dowry.
Uruk	253 BCE (Antiochus II)	Cuneiform text	Temple archive of the Bit-Reš (temple of the god Anu at Uruk)	A textile « <i>karpasu</i> » for the garments of the gods (link with the Sanikrit <i>karpāsa</i> ).

- 54 The detailed revision of the mentions of *kidinnû* in the cuneiform texts, as well as the consideration of Greek texts and archaeological evidence (textile remains) constitute a network of evidence showing that *kidinnû* could in fact mean cotton in Akkadian. We can thus draw the following chronology based on the dataset currently available (Figure 3).
- 55 Cotton had been known in Babylonia since the 9<sup>th</sup> century BCE, according to a text of Sippar regulating the dressing ceremony of the god Šamaš, and in Assyria since the 8<sup>th</sup> century BCE in the tombs of Nimrud's queens. It was then considered a precious material, used only for specific garments for the main god of Sippar, and for a funerary dress for one of the women of the Assyrian royal court. It was rare: only one garment from the Nimrud tombs was in cotton. The first attempt to cultivate cotton trees in Assyria, then called the "trees bearing wool", was made by the king Sennacherib at the beginning of the 7<sup>th</sup> century BCE. Cotton fabrics were found in an Elamite tomb of a member of the merchant aristocracy dating to the second half of the 7<sup>th</sup>- beginning of the 6<sup>th</sup> century BCE. At this time cotton was still a precious material in Elam, used to make funerary garment, but it was commoner than in Assyria (all the fabrics found in this tomb were woven in cotton)
- 56 Then, cotton (*kidinnû*) was mentioned in the Babylonian administrative texts from Sippar, Uruk and Babylon, throughout the whole period covered by the documentation, from the end of the 7<sup>th</sup> century to the beginning of the 5<sup>th</sup> century BCE. It was mainly used to manufacture several specific garments for the deities. At Sippar, its use more or less follows the rules set out in the 9<sup>th</sup> century text regulating the dressing ceremony of Šamaš. Nevertheless, cotton was not as precious as other products used to make the garments of the gods, such as wool colored with imported dyes (purple, madder). Indeed, *kidinnû* was given to prebend owners as a salary, to the king for his rations (perhaps as a supply for the army), and used by the temple as a mean of payment to buy other commodities. *Kidinnû*'s price is modest according to the attestations from Sippar. It therefore seems that the temples could easily dispose of this material (although perhaps more so in Sippar than in Uruk), and that it was not considered particularly valuable. Cotton fabrics from a Neo-Babylonian level were discovered in a funeral jar at Uruk.
- 57 During the Achaemenid domination upon Babylonia, Cyrus I and Darius I conducted military operations in India, and created a satrapy in the Indus basin region. At the time, linen fabrics "from Gandhara" reached Babylonia, which attest lively textiles exchanges between India and Mesopotamia. The cultivation of *kidinnû* in the vicinity of Babylon can be deduced from a text dated from the reign of Darius I. According to Herodotus, Xerxes I incorporated Indians soldiers, dressed in cotton, in his army. Iranian and Babylonian contingents could therefore have seen these particular garments. Alexander's conquest intensified the contacts with India, which continued throughout the Hellenistic period when Greek settlers established themselves in Babylon. Cotton was perhaps mentioned in a dowry list from Babylon from the 3<sup>rd</sup> century BCE, which might attest the diffusion of this type of textile among the urban elite families. In the 3<sup>rd</sup> century BCE, a Sanskrit word for cotton was adopted directly into Akkadian in the form *karpasu*. This term appears in a list of textiles destined for the cult of the gods, in the temple of Anu, at Uruk. Despite the greater diffusion of cotton during the 1<sup>st</sup> millennium BCE, its shows an interesting permanence of its use: it is still employed to manufacture textiles destined for the deities of the Babylonian temples.

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## BIBLIOGRAPHY

- Alvarez-Mon J. 2005 – The introduction of cotton in the Near East, a view from Elam. In : Abdi K. (Ed.), *Draya tya hacâ Pârsâ aitiy: Essays on the Archaeology and History of the Persian Gulf Littoral*. Leuven, Peeters Publishers : 41-52.
- Alvarez-Mon J. 2010 – *The Arjan Tomb: at the Crossroad of the Elamite and the Persian Empires*. Louvain, Peeters Publishers.
- Beaulieu P.-A. 1989 – Textes administratifs inédits d'époque hellénistique provenant des archives du Bit Rēš. *Revue d'Assyriologie* 83 : 53-87.
- Beaulieu P.-A. 2003 – *The Pantheon of Uruk during the Neo-Babylonian Period*. Boston, Leyde, Brill, Styx.
- Bongenaar A.V.C.M. 1997 – *The Neo-Babylonian Ebabbar Temple at Sippar: Its Administration and its Prosopography*. Leyde, NINO.
- Borger R. 2004 – *Mesopotamisches Zeichenlexikon*. Münster, Ugarit-Verlag.
- Bouchaud C. & Tallet G. Forthcoming – L'intégration du coton au sein des économies agraires antiques : un marqueur discret d'innovation.
- Bouchaud C., Clapham A. & Newton C. et al 2018 – Cottoning on to Cotton (*Gossypium* spp.) in Arabia and Africa during Antiquity. In : Mercuri A.M., D'Andrea A.C., Fornaciari R. & Höhn A. (Ed.), *Plants and People in the African Past: Progress in African Archaeobotany*. Cham, Springer International Publishing : 380-426.
- Bouchaud C. Tengberg M. & Dal Prà P. 2011 – Cotton cultivation and textile production in the Arabian Peninsula during antiquity: the evidences from Madâ'in Sâlih (Saudi Arabia) and Qal'at al-Bahrain (Bahrain). *Vegetation History and Archaeobotany* 20 : 405-417.
- Crowfoot E. 1995 – Textiles from Recent Excavations at Nimrud. *Iraq* LVII : 113-118.
- Dalley S. 2015 – *The Mystery of the Hanging Garden of Babylon: An Elusive World Wonder Traced*. Oxford, OUP.
- Finkel I. & Fletcher A. 2016 – Thinking outside the Box: The Case of the Sun-God Tablet and the Cruciform Monument. *Bulletin of the American School of Oriental Research* 375 : 215-48.
- Frahm E. 2017 – Assyria and the Far South: The Arabian Peninsula and the Persian Gulf. In : Frahm E. (Ed.), *A companion to Assyria*. Chichester, John Wiley & Sons : 299-310.
- Fujii H. 1987 – Roman Textiles from At-Tar Caves in Mesopotamia. *Mesopotamia* XXII : 215-231.
- Fuller D.Q. 2008 – The spread of textile production and textile crops in India beyond the Harappan zone: an aspect of the emergence of craft specialization and systematic trade. In : Osada T. & Uesugi A. (Ed.), *Linguistics, archaeology and the human past. Indus Project*. Kyoto, Research Institute for Humanity and Nature : 1-26.
- Gansel A. R. 2018 – Dressing the Neo-Assyrian Queen in Identity and Ideology: Elements and Ensemble from the Royal Tombs at Nimrud. *American Journal of Archaeology* 122 (1) : 65-100.
- Gaspa S. 2018 – *Textiles in the Neo-Assyrian Empire. A Study of Terminology*. Boston-Berlin, De Gruyter.



- Graslin-Thomé L. 2009 – *Les échanges à longue distance en Mésopotamie au I<sup>er</sup> millénaire, une approche économique*. Paris, De Boccard.
- Grayson A.K. & Novotny J. 2012 – *The Royal Inscriptions of Sennacherib, King of Assyria (704-681 BC)* RINAP 3/1. Winona Lake, Eisenbrauns.
- Haerincx E. 2002 – Textile remains from Eastern Arabia and new finds from Shakhroua (Barhain) and ed-Dur (Umm al-Qaiwain, U.A.E.), *Arabian Archaeology and Epigraphy* 13 : 246-254.
- Henkelman W. 2003 – Persians, Medes and Elamites: Acculturation in the Neo-Elamite Period. In : Lanfranchi G., Roaf M. & Rollinger R. (Ed), *Continuity of Empire (?) Assyria, Media, Persia*. Padova, S.a.r.g.o/n/ Editrice e Libreria : 180-231.
- Højlund F. Andersen H.H. 1994 – *Qala'at al-Barhain vol. 1, The northern city wall and the Islamic fortress*. Aarhus, University Press.
- Ishow H. 2003 – *La politique agraire en Irak de 1920 à 1980 et ses conséquences sur les sociétés rurales*. Paris, Publibook.
- Joannès F. 1991 – Nabû-apla-iddin or Nabû-apla-ušur? *Nouvelles Assyriologiques Brèves et Utilitaires* 113 : 84-85.
- Kleber K. 2008 – *Tempel und Palast. Die Beziehungen zwischen dem König und dem*
- Kleber K. 2017 – *Spätbabylonische Texte zum lokalen und regionalen Handel sowie zum Fernhandel aus dem Eanna-Archiv*. Dresden, Islet.
- Laursen S. & Steinkeller P. 2017 – *Babylonia, the Gulf Region, and the Indus, Archaeological and Textual Evidence for Contact in the Third and Early Second Millennia B.C.* Winona Lake-Indiana, Eisenbrauns.
- Lombard P. & Tengberg M. 2001 – Environnement et économie végétale à Qal'at al-Barheïn aux périodes Dilmoun et Tylos. *Premiers éléments d'archéobotanique. Paléo* 27 : 167-181.
- MacGinnis J. 1994 – The Royal Establishment at Sippar in the 6<sup>th</sup> century BC. *Zeitschrift für Assyriologie und Vorderasiatische Archäologie* 84 : 198-219.
- Meissner B. 1920 – *Babylonien und Assyrien I*. Heidelberg, Carl Winters, Universitätsbuchhandlung.
- Mo'taghd S. 1990 – Textiles Discovered in the Bronze Coffin of Kitin Hutran in Arjan, *Behbahan. Special Edition of Athâr, Arjan, Athar* 17 : 62-147.
- Muthukumar S. 2016 – Tree Cotton (*G. Arboreum*) in Babylonia. In : Foietta E. et al. (Ed.), *Cultural & Material Contacts in the Ancient Near East. Proceedings of the International Workshop 1-2 December 2014*, Torino. Firenze, Apice libri : 98-105.
- Oates J. & Oates D. 2001 – *Nimrud, An Assyrian Imperial City Revealed*. London, British School of Archaeology.
- Oppenheim L. 1967 – Essay on Overland Trade in the First Millennium B.C. *Journal of Cuneiform Studies* 21 : 236-254.
- Payne E. 2007 – *The Craftsmen of the Neo-Babylonian Period: A Study of the Textile and Metal Workers of the Eanna Temple*. PhD Diss. Yale University, unpublished.
- Potts D.T. 1999 (new ed. 2016) – *The Archaeology of Elam, Formation and Transformation of an Ancient Iranian State*. Cambridge, Cambridge University Press.
- Potts D.T. 2007 – Differing Modes of Contact between India and the West: Some Achaemenid and Seleucid Examples. In : Ray H.P. & Potts D.T. (Ed.), *Memory as History: The Legacy of Alexander in Asia*. Michigan, Aryan Books International : 122-130.

Potts D.T. 2009 – The Archaeology and Early History of Persian Gulf. In : Potter L. (Ed.), *The Persian Gulf in History*. Basingstoke, Palgrave Macmillan US : 27-56.

Quillien L. 2014 – Flax and Linen in the First Millennium Babylonia BC: the Origins, Craft Industry and Uses of a Remarkable Textile. In : Michel C. & Nosch M.-L. (Ed.), *Prehistoric, Ancient Near Eastern and Aegean Textiles and Dress, an Interdisciplinary Anthology*. Oxford, Oxbow Book : 271-298.

Quillien L. 2015 – Le manteau pourpre de Nabuchodonosor : circulations économiques de la laine de couleur pourpre en Mésopotamie au I<sup>er</sup> millénaire av. J.-C. *Hypothèses 2014* : 105-118.

Tengberg M. & Moulherat C. 2008 – Les “arbres à laine”. Origine et histoire du coton dans l’Ancien Monde. *Les Nouvelles de l’Archéologie* 114 : 42-46.

Toray Industries 1996 – Report on the Analyses of Textiles Uncovered at the Nimrud Tomb-chamber. *Al-Rafidan* vol. xvii : 199-206.

Van Ess M. & Pedde F. 1992 – *Uruk Kleifunde II, Ausgrabungen in Uruk-Warka Endberichte* 7. Mainz, Philipp von Zabern.

Wunsch C. 2000 – Neubabylonische Geschäftsleute und ihre Beziehung zu Palast- und Tempelverwaltungen: das Beispiel der Familie Egibi. In : Bongenaar A.V.C.M., *Interdependency of Institutions and Private Entrepreneurs*. Istanbul-Leyden, Nederlands Instituut voor het Nabije Oosten : 95-118.

Zawadzki S. 2005 – Šamaš visit to Babylon. *NABU 2005/1* : note 9.

Zawadzki S. 2006 – *Garments of the Gods: Studies on the Textile Industry and the Pantheon of Sippar According to the Texts from the Ebabbar Archive*. Fribourg, Vandenhoeck & Ruprecht.

Zawadzki S. 2013 – *Garments of the Gods. Texts*. Volume 2. Fribourg, Vandenhoeck & Ruprecht, Fribourg Academic Press.

## NOTES

1. These objects were found by the archaeologist Hozmuzd Rassam at Tell Abu Habbah (ancient Sippar), and were brought to the British Museum where they are still kept (objects BM 91000, 91001, 91002). For a recent analysis of this finding and the previous bibliography related to it, see Finkel & Fletcher 2016.

2. The dating of this text from the reign of Nabû-apla-iddina (888-855 BC) was established by Joannès (1991) and a study of its contents in relation to the ceremony of the dressing of the gods' statues in the temple of Sippar was made by Zawadzki 2006.

3. RINAP 3/1 16 vii 17-21; 17 vii 53-57 (Grayson & Novotny 2012: 121 and 143).

4. Their names were mentioned on objects found in tomb II. On the queens' tombs, see Oates 2001, 83 ; and for the reconstitution of the outfit of the queens, Gansel 2018.

5. Toray Industries 1996, Pl. 5 made the analysis of the fabrics of tomb II. According to Crowfoot 1995, the threads of the Nimrud tombs' fabrics were S-twisted and the weave was in tabby and its variants.

6. Jar W 21594, Nr. 1829. Van Ess & Pedde 1992, 257-258, nevertheless, a picture of the textile fragments is available pl. 146.

7. This decoration is also found on the Elamite royal garment (Henkelman 2003: 192, n. 37, quoted by Alvarez-Mon 2005, 49, n. 29). The term for cotton in Elamite was not identified. The textiles *kuktum*, also attested in Medio-Elamite, might be a hypothesis but Alvarez-Mon (2005: 49-52) prefers the translation “linen”. There is no attestation of cultivation of cotton in Elam in the texts.

8. Lombard & Tengberg 2001, Højlund & Andersen 1994, Haerinck 2002: 246-254, Tengberg & Moulhérat 2008, Bouchaud *et al.* 2011.
9. Theophrastus, *Enquiry into Plants*, IV, 7, 7. He acquires his knowledge on Near Eastern botanics from the accounts of Alexanders conquest and did not travel himself to the Persian Gulf.
10. Sargon II pretends to have received gifts from Uperi, king of Dilmun, and Sennacherib states that the island is the Southern border of his empire. See Frahm 2017: 299-310 for details and references. He notes that Uperi is an Elamite name, reflecting the close ties between Iran and Bahrain.
11. A Neo-Babylonian tablet of 544 BCE mentions a governor (*bēl-piḫati*) of Dilmun. The status of the island in the Achaemenid Empire is not clear but the archaeological remains reveals contacts between the island and Iran (Potts 2009: 27-56).
12. In his book on textile terminology during the Neo-Assyrian period, based on an exhaustive analysis of the palatial archive dealing with the textile production, Gaspa does not identify a specific word for cotton besides this periphrasis and remarks that it must signify the novelty of the importation of the plant by Sennacherib. Gaspa 2018: 49-53.
13. Herodotus, *Histories*, 6-106. 5<sup>th</sup> century BC. For other mentions of trees bearing wool in classical texts, see Bouchaud & Tallet forthcoming.
14. RINAP 3/1 16 vii 17-21 ; 17 vii 53-57 (Grayson & Novotny 2012: 121,143).
15. RINAP 3/1 16 viii 50-51 ; 17 viii 64 (Grayson & Novotny 2012: 124, 145).
16. Meissner 1920: 209, Zawadzki 2006: 27, Muthukumaran 2016: 98.
17. Zawadzki 2006: 25-29. Before him, Oppenheim suggested the word *tumānu*, but this hypothesis was rejected because this term is preceded by the determinative for linen, and because *tumānu* is not itself used as a determinative before textile terms, like linen or wool (Oppenheim 1967: 251-252).
18. CAD K, 465-466.
19. Borger 2004, 273 “allzu unsisher”. This reading appears once in an Assyrian text under the form “ṭen”, AHW 1388a and CAD T, 100a.
20. CAD K, 342-344.
21. Zawadzki 2013, texts n°175, 582, 583, 584, 609 ; CT 55 753.
22. Respectively, Dar 533: 34, a text concerning the collection of the *šibšu* tax (5 gur *šá ki-din-nu-ú šib-šu*) ; CT 49 165: 8 (dowry text, <sup>sis</sup>*kit-ni-tu<sub>4</sub> ḫi-ših<sup>2</sup>-tu<sub>4</sub>*) and Camb 434: 3 (in broken and obscure context, 2 *dan-nu ki-di<sup>2</sup>-na-a-ta*).
23. The South Dravidian terms are: *kiṅṭaṅ*, *giṅṭa*, *giṅṭemu* (Muthukumaran 2016: 100).
24. According to Wunsch (2000: 110) text Dar 533 contains references to places and people connected to the activities of the family of Babylonian entrepreneurs Egibi, but without mentioning members of the family themselves.
25. Dar 533: 34 “5 gur *šá ki-din-nu-ú šib-šu*”.
26. Zawadzki 2013 n°573: 1-5 “13 ma-na *ki-din-né-é* / 1 ma-na *ta-bar-ri* / a-na *šib-tu<sub>4</sub> šá<sup>d</sup>[a-nu-ni-tu<sub>4</sub>] / šá lu-bu-uš-tu<sub>4</sub> [šá iti-du<sub>6</sub>] / a-na <sup>1</sup>*ba-k[u-ú-a si-in]*”.*
27. YOS 3 194; 15-19: “a-mur / me-e šu<sup>u</sup> u *ki-di-né-e* / šá [<sup>d</sup>*gašan*] šá unug<sup>ki</sup> u <sup>d</sup>*na-na-a* / [a-na en]-ia / [ul]-te-bi-la”.
28. CT 55 753, Zawadzki 2013, n°577a, 582, 585. See also CT 49 165 but its identification with the word *kidimmû* is not certain.
29. Zawadzki 2013, n°573.
30. See the translation of Zawadzki 2013, 162-163. This inscription is said to be a copy of a slab of Šamaš, dated to the king Nabû-apla-iddina.
31. BM 91002 = BBS 36 = Zawadzki 2013, n°175: 3-4 “4 <sup>túg</sup>*šib-ti ki-din-nu* 40 ma-na *ki-lá-šú-nu*”.
32. UVB 15 40: 12’.
33. See the following major studies on the garments of the gods in Neo-Babylonian temples: Beaulieu 2003, Zawadzki 2006 and Payne 2007.

34. Zawadzki 2013 n°575. Other examples are: Zawadzki 2013 n°556: 2 (38 minas of *kidinnû* for several *šibtu* of Anunītu) ; Zawadzki 2013 n°561: 1 (5 minas of *kidinnû* for one *šibtu*) ; Zawadzki 2013 n°573: 1 (13 minas of *kidinnû* and one mina of red wool for one *šibtu* of Anunītu) ; Zawadzki 2013 n°576: 2-3 (16 minas of *kidinnû* for one *šibtu* of Anunītu) ; Zawadzki 2013 n°609 (18 minas of *kidinnû* for one *šibtu* of Anunītu).
35. Zawadzki 2013, n°582: 1-5 “10 ma-na <sup>si</sup>gki-din-nu (...) ku-mu <sup>hi</sup>si-ga” (=Zawadzki 2013, n°582). In the text Zawadzki 2013, n°581, *kidinnû* is also given for the bedcover of Šamaš.
36. Zawadzki 2013, n°558, 16.5 minas of *kidinnû* (8.25 kg) are given for the *lubāru* of Šamaš. This garment appears also in Zawadzki 2013 n°582: 10 minas of *kidinnû* from the *lubāru* of Šamaš. See also Zawadzki 2013 n°574.
37. Zawadzki 2013 n°582
38. Slave of prebendary weaver: Zawadzki 2013 n°575, n°573; weaver of coloured clothes: Zawadzki 2013 n°556; mender: Zawadzki 2013 n°561, n°582; linen weaver and mender: Zawadzki 2013 n°576, n°609.
39. BM 74670 (Zawadzki 2013 n°609): “18 ma-na ki-din-nu 1 ma-na <sup>gi</sup>ḥab / 1 qa <sup>na</sup>gab-ú a-na ṭi-mu-tu<sub>4</sub> / šá <sup>d</sup>a-nu-ni-tu<sub>4</sub> a-na <sup>d</sup>ḥar-ši-man-ni / [s]i-na”. The term *ṭimūtu* is rare and appears only twice in the temple archive (in this text and in BM 83628). Zawadzki (2006) proposes the translation “thread” because of its similarity with other words for thread: *ṭimu* and *ṭimitu*.
40. In the text YOS 6 74 from the temple of Uruk (Nbn 06) 64 linen fabrics, together with dyes, are delivered by a linen weaver to the temple. Text NCBT 1069, from Uruk (NB), indicated that a linen *salḫu* garment have to be dyed in blue-purple.
41. YOS 3 194: 14-19 “šū-lum / a-na é a-mur / me-e šu<sup>u</sup> u ki-ti?-né-e / šá [<sup>d</sup>gašan] šá unug<sup>ki</sup> u <sup>d</sup>na-na-a / [a-na en]-ia / [ul]-te-bi-la”. A *kidinnû* is also sent with the leftover of the gods’ meal in another letter from Uruk (YOS 3 68:33)
42. CT 22 35: 40-41 “[the hand water [basin] and a *kidinnû* [...] of my lord, I have sent”, [...] ‘me-e’ šu<sup>u</sup> u ki-din-né-e / [...] meš šá <sup>d</sup>en-ia ul-te-ḥi-ir?”.
43. CAD K: 465, *kitinnû* 2.
44. YOS 3 136:9.
45. Zawadzki 2013, n°557; 583; 564; 563; 566; 568; 571; and 578 (to a priest). Texts of Sippar, from Nebuchadnezzar 30 to Darius 25, 575-497 BC. Quantities of *kidinnû* involved: 1 to 5 minas (0.5-2.5 kg), up to 15 minas (7.5 kg) in n°447.
46. CT 56 6 (Zawadzki 2013, n°557).
47. BM 60842: 1-5 (Zawadzki 2013 n°563): “2 ma-na ki-din-né-e / e-lat 1 ma-na igi-ú-tú / a-na <sup>d</sup>nà-šeš-meš-gi / a-šú šá <sup>1</sup>ap-la-a / ina pap-pa-[s]i-šú si-in”. On the prebendary brewer Nabû-aḥḫē-šullim, see Bongenaar 1993: 221.
48. Zawadzki 2013, n°559; 560; 569 (3 minas of *kidinnû*, 1.5 kg). About the king’s rations, see MacGinnis 1994: 203 and Kleber 2008: 295.
49. PTS 2679 (Kleber 2017 n°75) ; YOS 21 140.
50. Zawadzki 2013, n°567 ; 572 ; 579 ; 580 (1.83 minas to 15.66 minas - 0.9 to 7.8 kg). Nabonidus to Cambyses.
51. BM 79603 (Zawadzki 2013, n°577) “ki-din-né-e šá i-na mu 6-kam <sup>1</sup>kam-bu-zi-ia / lugal tin-tir<sup>ki</sup> lugal kur-kur a-na kù-babbar si-na / 41 ma-na ki-din-né-e a-na 13 gín šu[l-l]u-tu 1 gín kù-babbar / a-na <sup>d</sup>en-mu a <sup>d</sup>din si-na iti gu<sub>4</sub> u<sub>4</sub> 27-kam / 20 ma-na ki-din-né-e a-na 10 gín kù-babbar a-na / [<sup>d</sup>e]n-it-tan-nu a <sup>1</sup>numun-a-a si-na 2/3 ma-na ki-din-né-e / [x ma-na ki]-tin-né-è / [x ma-na ki]-tin-né-e a-na 2 pi 3 qa še-giš-ì x [x] / [x x x a] <sup>1</sup>ir-<sup>d</sup>en si-na iti [x]”.
52. Nbn 439 (Zawadzki 2013, n°570).
53. For instance, the weavers do not received as their prebendary salary *pappasu*, which is a part of the precious textile materials they used for their work (Bongenaar 1997: 312, Zawadzki 2006: 51 and 56).
54. UVB 15 40: r. 4.

55. Zawadzki 2006: 28-29, Muthukumaran 2016: 101.
56. Theophrastus, *Inquiry into Plants*, IV, 7, 7.
57. Arrian, *Indica* 16.1
58. *Periplus of the Erythraean Sea* § 41. For an exhaustive account on the attestations of cotton in Greek texts see Bouchaud & Tallet forthcoming.
59. See attestations in CAD Š/II, 385.
60. Such bags of standard capacity are used to store cereals (see for instance CT 22 2).
61. According to Kleber 2017, text N°75, it may be the case in this text but it is an exception, apart from carnelian sometimes, imported products were not sold.
62. Lead and wine according to Bongenaar 1997: 285. See Zawadzki 2013, n°570 for an edition of the text.
63. GCCI 2 361, Potts 2007: 127.
64. Herodotus, *Histories*, VII, 65 (5<sup>th</sup> century BC).
65. The site of Uruk provided 8000 tablets from the 1<sup>st</sup> millennium BCE. On the god's garments at Uruk see Beaulieu 2003.
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## ABSTRACTS

The archaeological finds attest that cotton textiles appeared in Mesopotamia during the 1<sup>st</sup> millennium B.C. The first attempt to cultivate this plant, according to the available written sources, was by the Assyrian king Sennacherib, and also dates back to this period. However, the identification of the word for cotton in Akkadian is still the subject of debate. The present paper will first clear up these debates and summarize the current arguments in favour of the most probable hypothesis: the term *kidinnû* would refer to cotton. From this postulate, the crossing of archaeological and textual data will allow us to make an attempt at chronology of the spread of cotton in the region. Then, a study of the different uses of cotton will shed light on the social status and on the economic value of this textile fibre in Mesopotamia. Indeed, although cotton was a new product in Mesopotamia in the 1<sup>st</sup> millennium BCE, its price remained moderate and it was not a luxury product.

Les découvertes archéologiques témoignent de la présence de textiles en coton en Mésopotamie au I<sup>er</sup> millénaire AEC. Selon les sources écrites disponibles, la première tentative de culture du cotonnier a été réalisée par le roi assyrien Sennachérib pendant cette même période. Cependant, l'identification du mot désignant le coton en akkadien fait toujours l'objet de débats. Le présent article présentera d'abord un état des lieux de cette question et synthétisera les arguments actuels en faveur de l'hypothèse la plus probable : le terme *kidinnû* désignerait le coton. À partir de ce postulat, le croisement des données archéologiques et textuelles nous permettra de proposer une chronologie de la diffusion du coton dans la région. Ensuite, une étude des différents usages du coton permettra de mettre en lumière le statut et la valeur économique de cette fibre textile en Mésopotamie. En effet, bien que le coton soit un produit nouveau dans la région au I<sup>er</sup> millénaire AEC, son prix reste modéré et il ne s'agit pas d'un produit de luxe.

## INDEX

**Mots-clés:** coton, Mésopotamie, cunéiforme, Akkadien, Âge du Fer, économie

**Keywords:** cotton, Mesopotamia, cuneiform, Akkadian, the Iron Age, economy

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