

“TO WATER BY FOOT” – WHAT AGRICULTURAL PRACTICES WOULD THE ISRAELITES KNOWN WHEN THEY WERE IN EGYPT?

By Maureen Kaplan

In the book of Deuteronomy, Moses speaks to the Children of Israel before they cross the Jordan River and take possession of the land. As Moses himself will not make that journey, his speeches in Deuteronomy are his last chance to exhort the Israelites to follow God’s laws and stress their dependency upon God in their new land. The focus of this article is Deuteronomy 11:10 where Moses emphasizes how the land of Israel is not like the land of Egypt. The subsequent verses (Deuteronomy 11:13-21) emphasize the need for rain; rain at the proper times (in the spring and autumn) so that grain can be grown, vineyards yield their grapes, cattle have forage, and trees produce olives for oil. If Israel does not follow the commandments, there will be no rain and Israel will disappear from the good land.

David Frankel, Professor and Rabbi, discusses the favorable qualities of “the good land” of Israel, highlighting the different descriptions in Deuteronomy chapters 8 and 11. The second description starts with Deuteronomy 11:10

**כִּי הָאָרֶץ אֲשֶׁר אַתָּה בָּא־שָׁמָּה לְרִשְׁתָּהּ לֹא כְאֶרֶץ מִצְרַיִם הִוא אֲשֶׁר
יֵצְאתָם מִשָּׁם אֲשֶׁר תִּזְרַע אֶת־זֶרְעֶךָ וְהִשְׁקִיתָ בְּרִגְלְךָ כִּגְן הֵיכָל:**

which he translates as “For the land that you are about to enter to occupy is not like the land of Egypt, from which you have come, where you sow your seed and irrigate by foot

like a vegetable garden." Rabbi Frankel notes that "it is not entirely clear what the phrase "ברגלך והשקית," "irrigate by foot" refers to."¹

The phrase has troubled both medieval and modern commenters. We begin with the text and commentaries², how it has been translated, and examine whether a discussion of the agricultural practices in Ancient Egypt might deepen our understanding of the text.

COMMENTARIES ON DEUTERONOMY 11:10

The commentary of Rashi (Rabbi Shlomo Yitchaki, Troyes, France, 1040-1105) speculates that in the land of Egypt one had to bring water from the Nile through your foot (i.e., one had to go to the Nile to bring water) to irrigate it, and notes that a garden of herbs would not have had enough from rain alone, and so one had to water it through the foot and shoulder (one had to run about to bring water which one had to carry on one's shoulder).

Turning to other modern translators and commentors, the 1985 Jewish Publication Society translation treats the phrase "by foot" as a metaphor for irrigation tasks generally:

¹ David Frankel, [The Good Land of Israel](#).

² Lundblom (op. cit.) mentions that parts of Deuteronomy 11:10-12 are contained in Qumran Scroll fragments 4QDeutc (fragments 12-15) and 4QDeutk1 (fragment 2). An examination of the material in Eugene Ulrich, ed. The Biblical Qumran Scrolls (Vetus Testamentum, Supplements, volume 134, Leiden: Brill) Chapter on Deuteronomy at 204-206 indicates a minor variation on the spelling of "by foot" with 4QDeutk1 having a hay after chaf. Julie A. Duncan, "Excerpted Texts Of "Deuteronomy" At Qumran," *Revue de Qumrân*, Vol. 18, No. 1 (69) (Avril 1997) at 43-62 suggests that the excerpted texts were sometimes copied from memory, thus leading to some of the variations. [Hershel Shanks, The Dead Sea Scrolls – Discovery and Meaning \(Biblical Archaeology Society, 2007\)](#) points out that the Qumran scrolls predate a fixed canon of the Hebrew Bible and texts had not yet been standardized. The variants seen in the Qumran texts of Deuteronomy 11:10 do not result in differences material to this discussion.

“For the land that you are about to enter and possess is not like the land of Egypt from which you have come. There the grain you sowed had to be watered by your own labors, like a vegetable garden.”³

Tigay, in his commentary, notes however that the phrase literally means “by your foot,” and suggests that it refers to some aspect of ancient Egyptian irrigation. He describes two possibilities: (1) an irrigation system where sluice gates to control the flow are opened and closed by use of the foot, or (2) a method of making and breaking ridges of dirt to control the water flow into fields and gardens. Tigay also notes a third alternative— because the text could be translated “on your foot (or feet),” it might then refer to carrying water in containers to fields or gardens.⁴

Weinfeld translates the verse as “For the land into which you are coming to take hold of it is not like the land of Egypt from which you went out, where you sow your seed and water it with your foot like a vegetable garden.”⁵ His commentary begins with the general observation that a farmer in ancient Egypt had to use both hands and feet to water fields, such as by using a machine known as a “shaduf” (see more below) to lift buckets from the river. He then lists options presented by other scholars as to what real-world practice the phrase “by foot” might refer to, including: turning water wheels by foot, using channels dug with the foot to direct water flow to the crop, and as a euphemism for using urine (see 2 Kings 18:27).

Lundbom comments that we don’t know how the seed was watered “with the foot.”⁶ He cites a source that postulated a small water wheel operated by foot (in contrast

³ *The Holy Scriptures* (Philadelphia, PA: The Jewish Publication Society of America, 1985). This translation is used in Jeffery H. Tigay, *The JPS Torah Commentary Deuteronomy-The Traditional Hebrew Text with the New JPS Translation* (Philadelphia, PA: The Jewish Publication Society, 1996) at 111-113 and The Rabbinical Assembly, *Etz Hayim. Torah and Commentary* (New York, NY: The United Synagogue of Conservative Judaism, 2001) at 1051-1052.

⁴ Jeffrey H. Tigay, op cit. at 111-113.

⁵ Moshe Weinfeld, *Deuteronomy 1-11: A New Translation with Introduction and Commentary* (Anchor Bible 5. New York, NY: Doubleday Press, 1991) at 445-446.

⁶ Jack R. Lundbom, *Deuteronomy: A Commentary* (Grand Rapids, MI: Eerdmans, 2013) at 402-403.

to the larger water wheels operated with oxen) and cites Rashi saying that in Egypt, you had to bring water on foot from the Nile to irrigate the land. Lundbom closes his commentary on this verse with the suggestion that "by foot" means by human labor.

The manner of how a text is laid out and punctuated for publication might have implications for how that text is interpreted by a reader. For example, additional translations include:

"For the land that you are entering to possess: it is not like the land of Egypt, from which you went out, where you sow your seed and water it with your foot like a garden of greens."⁷

"For the land, whither thou goest in to possess it, is not as the land of Egypt, from whence ye came out, where thou didst sow thy seed, and didst water it with thy foot, as a garden of herbs."⁸

"For the land into which you are coming to take hold of it is not like the land of Egypt from which you went out, where you sow your seed and water it with your foot like a garden of greens."⁹

There are subtle differences among the translations, primarily in the layout of the text and whether or not a comma is used after "seed" and before the phrase about watering with your foot. The Fox translation places the actions of sowing seed and watering on two separate lines. The 1917 JPS translation separates the two actions with a comma. The Fox translation appears to have one continuous flow of text for the entire verse. The Etz Hayim (new JPS) translation breaks the verse into two English sentences, with all the agricultural activities in the second sentence.

An initial question, then, is whether the text is discussing one or two types of agriculture? We examine the possibilities below. We can use contemporary records — such

⁷ Robert Alter, *The Five Books of Moses* (New York, NY: W.W. Norton & Company Inc., 2004) at 936.

⁸ A. Cohen, *The Five Books of Moses*, The Soncino Chumash (London: The Soncino Press, 1966) at 1047-1048 using the JPS 1917 translation).

⁹ Everett Fox, *The Five Books of Moses*, The Shoken Bible (New York, NY: Shoken Books Inc., 1995), vol. I at 936.

as drawings in tombs, land holding documents, and artifacts – to reconstruct likely options for ancient Egyptian agricultural practices. In addition, we can examine current practices by Egyptian farmers insofar as they preserve ancient practices.

INUNDATION CROPS OR "SOW YOUR SEED"

Prior to the Aswan Dam, completed in 1972, the Nile flooded annually. The waters started to rise in Upper Egypt (i.e., the South) by August and reached the Mediterranean four to six weeks later. The flood deposited fresh silt to renew the land, flushed out any salts that had built up in the soil, and provided the moisture to raise crops.¹⁰ This cycle was so crucial to the ancient Egyptian mindset that its calendar consisted of three seasons named "Inundation," "**Seed**," (emphasis added) and "Harvest."¹¹ The crops associated with inundation are primarily grains and include emmer, barley, and wheat.¹²

Ancient Egyptians envisioned that the deceased could enjoy life after death on terms very similar to the good life that the deceased had had in this world.¹³ Many of the wall paintings in tombs show everyday activities, such as music, dancing, crafts, hunting, fishing, and agriculture, to ensure that the deceased could enjoy these activities in the afterlife. For example, the tomb of Nakht (Thebes, New Kingdom, Dynasty 18, 1410-1370, B.C.E.; see Figure 1) shows workers planting the after-inundation crops. At the far right, the tomb owner, Nakht, is shown in his shaded pavilion watching his workers. Immediately in front of the pavilion are food offerings for the deceased for his enjoyment in the afterlife. From left to right, the upper register shows a worker sowing seeds while two workers hoe the ground, while in another region a worker harvests a tree. The lower register shows two sowers—one in front of two workers smashing dirt clods with mallets, while the second sower works a field plowed by two sets of cattle.



Figure 1. Tomb of Nakht. Sowing Seeds and Plowing. [Watercolor of original. Metropolitan Museum of Art. Accession number 15.5.19b.](#)

IRRIGATION IN ANCIENT EGYPT OR “WATER IT WITH YOUR FOOT”

The annual flood, while sufficient for grain, was not enough, however, to support crops that needed more constant access to water, such as trees, vegetables, and herbs.¹⁴ Eyre¹⁵, Katary¹⁶, and Antoine¹⁷ provide in-depth research on land ownership, water use,

¹⁰ William Willcocks and J. I. Craig, *Egyptian Irrigation* (Third Edition, London: E. F. & N. Spon, 1913) provide a detailed recording of the volumes, flow rates, and chemical makeup of the Nile water, how it is channeled into reservoirs for later irrigation, as well as the dates of sowing and harvesting various crops and how these dates change as the flow works its way from south to north. See also Margaret R. Bunsen. *Encyclopedia of Ancient Egypt* (New York, NY: Facts on File, Inc. 2002) Revised Edition at 277.

¹¹ William J. Murnane, *The Penguin Guide to Ancient Egypt* (New York, NY: Penguin Books, 1997) at 20.

¹² Karl W. Butzer, *Early Hydraulic Civilization in Egypt: A Study in Cultural Ecology* (Chicago, IL: University of Chicago Press, 1976) at 85. Flax, used for linen, was also farmed in this manner.

¹³ Murnane, op. cit. at 67-68.

¹⁴ Jules Janick, [“Origins of Agriculture in Egypt”](#) In: Selin H. (eds.) *Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures* (Dordrecht: Springer, 2016).

¹⁵ Christopher J. Eyre, “The Water Regime for Orchards and Plantations in Pharaonic Egypt” in *The Journal of Egyptian Archaeology* (Volume 80, London: Sage Publications, Ltd., 1994) at 57-80. He notes that orchards and gardens (termed “plantation agriculture”) entail a need for investment in land development and a perennial water supply, and thus differ from the annual arable land farming. He posits that changes in terminology for types of land in New Kingdom texts may relate to the development of large-scale plantation agriculture and technological development.

¹⁶ Sally L.D. Katary also examines ancient Egyptian and Greek sources for land tenure, described as the “regime by means of which land is owned or possessed, whether by landholders, private owners, tenants, sub-lessees, or squatters” with the mix of institutional and private ownership varying over time. See [Sally L.D. Katary, “Land Tenure \(to the End of the Ptolemaic Period\)” in Juan Carlos Moreno Garcia and Willke Wendrich \(eds.\) UCLA Encyclopedia of Egyptology \(Los Angeles March 2012\)](#), and Sally L.D. Katary, [“Land-Tenure in the New Kingdom: The Role of Women Smallholders and the Military,” Proceedings of the British Academy 96 1999 at 61-82](#)

¹⁷ Jean-Christophe Antoine, [“Modelling the Nile Agricultural Floodplain in Eleventh and Tenth Century B.C. Middle Egypt. A Study of the P. Wilbour and Other Land Registers”](#) In: Harco Willems and Jan-Michael Dahms (eds.) *The Nile: Natural and Cultural Landscape in Egypt* (Mainz: Transcript Verlag, 2017) at 15-21 for a statistical analysis of land registers in ancient Egyptian papyri. He identifies two sets of ownership for land. Plots associated with priests, overseers of cattle, and middlemen cultivators and administrators have a certain set of soil categories or one of two categories for a fiscal category of land. Plots associated with small landholders (usually having a professional link with the army) are characterized by landscape features such as groves, mounds,

and agricultural techniques in Egypt throughout antiquity. For the purpose of this paper, we provide a quick history of irrigation and different methods of getting the water from the Nile to the crops. As summarized above, commentators propose several possible meanings for this phrase. The goal of the review is to ascertain which technologies would have been in common use at the time the Israelites left Egypt.

The earliest evidence for irrigation in Egypt comes from a mace head of the Scorpion King (Dynasty 0, 3100–3000 B.C.E.), see Figure 2. The scorpion to the right of the Pharaoh's face is the source of the name "Scorpion King." Wearing the white crown of Upper Egypt, Pharaoh holds a large hoe to cut an irrigation ditch. The wavy lines shown under Pharaoh's feet are traditionally used to indicate water in ancient Egypt. The water channel clearly splits into two branches. A palm tree in a raised bed is located in the area between the water channels (Figure 2, lower right). So the main idea of irrigation to bring water closer to a field or garden existed for several millennia prior to the Exodus.¹⁸



high grounds and lakes/ponds. The first set of plots is measured in land-cubits while the second set is measured in aroua (about two-thirds of an acre).

¹⁸ It is beyond the scope of this article to discuss the historicity, or not, of the Exodus. For a summary of different viewpoints, see [Biblical Archaeology Review, Ancient Israel in Egypt and the Exodus, 2012](#).

Figure 2. Macehead of Scorpion King. Ashmolean Museum. Accession Number: AN1896
1908.E.3632. Ashmolean Image Library. Non-commercial use.

We now examine different methods used to move water from an irrigation channel to garden plots, often shown as raised beds.

CARRYING THE WATER IN POTS

At Saqqara, private tombs surround the pyramids of the Old Kingdom pharaohs. A magnificent example is the tomb of Mereruka who served under Teti (2323-2291 BCE). Figure 3 contains a small excerpt of Scene 3 on the south wall of chamber A1¹⁹ where workers are carrying pots of water which are then poured onto a raised bed garden.



Figure 3. Tomb of Mereruka. Watering a Raised Bed Garden. Chamber A1. South Wall, Scene 3.

INVENTION OF THE SHADUF

The ability to irrigate fields and gardens is limited by the ability to raise the water from the level of the river to the irrigation channel. By the time of the New Kingdom, Egyptians had invented a new technology, still in use today, called a shaduf.²⁰ Figure 4 is from Ipuw's tomb in Thebes and dates to about 1295-1213 B.C.E. (New Kingdom, Dynasty 19). The left side of the picture shows Ipuw's house with a doorway, painted lintels and reed-bundle columns. Outside of the house lie the gardens. The worker is operating a

¹⁹The Sakkarah Expedition, *The Mastaba of Mereruka. Part 1*. (Chicago, IL: The University of Chicago, Oriental Institute Publications, 1938) Volume 31 at plates 21 and 30.

²⁰ Murnane, op.cit. at 28-29.

shaduf, a long pole balanced on a frame, able to pivot directions, and with a heavy counterbalance on the land side of the pole. The worker pulls down on the rope to lower the bucket into the water, then pushes on the counterbalance to raise the bucket and pivots the bucket to empty the bucket into the irrigation channel.



Figure 4. Tomb of Ipuy. Garden Scene. [Watercolor of original. Metropolitan Museum of Art.](#)
[Accession number. 30.4.115.](#)

CONTROLLING THE FLOW OF WATER

The author took Figure 5 while traveling around Thebes in 1975. A woman is walking in the irrigation channel between a field ready for planting and another which has been under cultivation for some time. The water flow is controlled by breaking down the dirt ridges that channel the water between the larger and smaller irrigation channels. This is usually done with the foot. The sight of a worker walking along their field and adjusting the flow of water within the field with their foot is common now and was equally common in antiquity. To the author, this would be a likely interpretation of "watering by foot."



Figure 5. Thebes. 1975. Walking in the irrigation channel while monitoring the water flow. Taken by the author.

IMPORTANCE OF IRRIGATION AND CORRECT BEHAVIOR IN ANCIENT EGYPT

Ancient Egyptians envisioned a state of cosmic harmony, justice, order, and peace called “Ma’at,” shown as a woman wearing an ostrich plume on her head.²¹ When a person died, his or her soul was judged to determine whether he or she merited the afterlife. By the time of the New Kingdom, scribes produced papyri with a collection of spells to assist the deceased in his or her travels to the afterlife. These papyri, commonly referred to as the “Book of the Dead” were personalized with the deceased name and interred with the deceased. (The number and order of spells in any given papyrus can vary, but, for ease in identifying spells, Egyptologists follow the convention set in 1842 when Richard Lepsius, a German scholar, published a Ptolemaic Book of the dead and assigned numbers to individuals spells in the order they appeared in that particular papyrus.)²² The papyri, themselves, were named after the deceased for whom they were made.

²¹ Bunsen. op. cit. at 221-222. Also Murnane, op. cit. at 46, 53, and 61. The author uses the convention of “ma’at” to discuss the concept and “Ma’at” when referring to the goddess.

²² See [Fitzwilliam Museum entry on Spells in the Book of the Dead](#).

Figure 6 is taken from a "Book of the Dead" known as the Papyrus of Ani.²³ The right part of Figure 6 is Spell (or Chapter) 125, known as the "negative confession." Note the repetitive nature of the hieratic script, a cursive form of hieroglyphics. In this spell, the deceased swears to 42 judges that he or she has not committed a certain sin. All statements have the pattern "I have not" followed by a description of a particular sin, e.g., robbed, done violence, murdered, etc. Some papyri, including the papyrus of Ani, provide the name of a specific judge prior to the negative assertion. Two entries are relevant to our discussion: "I have not stopped the flow of water in its seasons" and "I have not built a dam against flowing water."²⁴ As noted by Willcocks²⁵

"Once people took to irrigation, they had to form laws and respect them, for disobedience and willfulness spelt [sic] ruin not only to their neighbours but also to themselves. When the water that irrigates your field has to flow in a channel which passes the fields of all your neighbours, and cannot be maintained in a state of efficiency unless all do their duty..."

Thus, you can see how proper behavior with respect to water rights in irrigation was an important concept of ma'at.

²³ Foy Scalf (ed.) [*Book of the Dead: Becoming God in Ancient Egypt*](#) (Chicago, IL: The Oriental Institute of the University of Chicago, 2017) Oriental Institute Museum Publications 39. Also E. A. Wallis Budge. *The Egyptian Book of the Dead (The Papyrus of Ani)* (London: British Museum, 1985).

²⁴ University College London, Digital Egypt for Universities. [Book of the Dead. Chapters by Number. Chapter 125A](#). From the papyrus of Nu. See also Allen, Thomas George. *The Book of the Dead or Going Forth by Day. Studies in Ancient Oriental Civilization. No. 37.* (Chicago, IL: The Oriental Institute of the University of Chicago. 1974) at 97-99.

²⁵ Willcocks. op. cit. at 796.



Figure 6. Papyrus of Ani. Book of the Dead. British Museum. Number EA 10470, 32. Dynasty 19. Creative Commons Attribution-Noncommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) license.

The four vignettes in the center of Figure 4 illustrate the Judgement of Osiris, which takes place in the “broad hall of the two goddesses of what is right” (i.e., ma’at). The vignettes “read” from top to bottom. The first vignette shows the two Ma’ats with their ostrich plumes in their broad hall.²⁶ The second vignette shows Ani making offerings to Osiris, god of the underworld. The third panel illustrates the weighing of the heart. Jackal-headed Anubis stands at the balance weighing the feather of ma’at (left) against Ani’s heart (right). The balance determines whether the deceased’s misdeeds outweigh the feather of truth. The creature with the head of a crocodile, forequarters of a lion, and hindquarters of a hippopotamus crouching to the right of Anubis is Ammit, “the Devourer,” who will eat Ani’s heart should he fail the test, thus condemning the deceased to eternal oblivion. In the bottom vignette, Thoth, the ibis-headed god who serves as the official scribe for the proceedings, is poised to record the outcome on a feather of ma’at.

SUMMARY

²⁶ The goddess Ma’at was sometimes shown in duplicate, indicative of the dual nature of things. For example, there cannot be a poor man if there is no rich man.

So what might a trip through Ancient Egypt's agricultural practices, as illustrated in its funerary practices, tell us about Deuteronomy 11:10? In the author's opinion, the text refers to two different methods of growing crops in Egypt. The first method was used for cereal crops, grown after the annual flood (inundation) has deposited fresh soil and water on the river plain. The phrase "sow your seed" likely refers to this agricultural practice.

The second method is use of year-round irrigation with water taken from the Nile for other crops and trees grown in gardens or orchards. In the author's interpretation, Deuteronomy 11:10 contains the text "to water by foot" to ensure that the Israelites know that irrigation will also be unavailable to them. That is, the text provides the reference to gardens to make the distinction. In other words, Moses is telling the Israelites that neither of the two methods that were used to raise agricultural products will work in the Promised Land. Israel, instead, will be dependent on God bringing rain in its proper season.

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